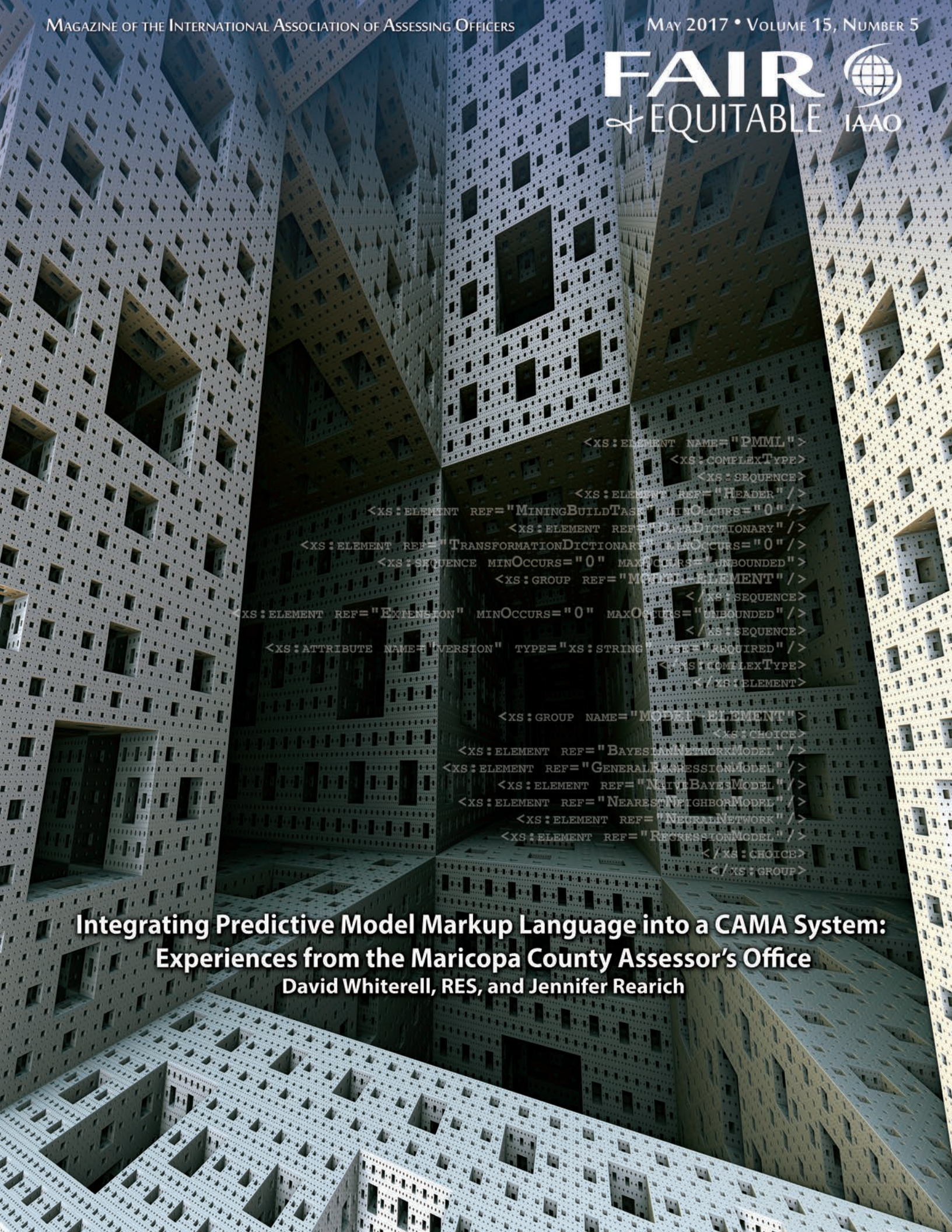
Magazine of the International Association of Assessing Officers

May 2017 • Volume 15, Number 5

FAIR & EQUITABLE

IAAO



Integrating Predictive Model Markup Language into a CAMA System: Experiences from the Maricopa County Assessor's Office

David Whiterell, RES, and Jennifer Rearich

IAAO Call for Candidates—Are You a Leader?

Becoming an IAAO Executive Board Member

IAAO Executive Board members are elected by IAAO members. Candidates are elected for three-year terms. IAAO Executive Board candidates must be prepared to meet at least four times per year (at IAAO expense), in various locations.

To be considered for nomination, prospective candidates must submit a nomination request to IAAO Headquarters. Candidate information materials, instructions, and application forms are available at IAAO.org.

The Nominating Committee is chaired by the Immediate Past-President of IAAO. There are specific criteria regarding IAAO participation that must be met by candidates.

The prerequisite requirements for candidacy are provided in the online candidate information resources. Once the election slate is selected, IAAO conducts a balloting process with the voting membership. Regular members vote for regular board positions and associate members vote for the associate member position on the ballot. For the 2017 election, there is not an associate member candidate position on the ballot.

Promotions and mailings generally must be done at the candidate's expense. Special promotional opportunities are available to all candidates through IAAO. This information is detailed in the online candidate information resources.

Becoming an IAAO Officer

To be considered for nomination as an officer, you must submit a nomination request to IAAO Headquarters. Candidate information materials, instructions, and application forms are available at IAAO.org.

Candidates must have previously served as a member of the Executive Board and their term on the board must have expired at least one year prior to the term of the officer position. There are four (4) officer positions at IAAO—President, President-Elect, Vice-President, and Immediate Past-President. Each position is limited to a one-year term. The IAAO Executive Director serves as the Secretary/Treasurer for the organization.

The President-Elect and the Vice-President are elected by IAAO members who are eligible to vote. The President-Elect automatically succeeds to the office of President when his/her President-Elect term ends.

Officers (i.e., Vice-President, President-Elect, President, and Past-President) normally serve one-year terms in consecutive years, requiring a four-year commitment. The officer positions require a significant amount of time and officers are expected to attend all Executive Board meetings, the IAAO annual conference, and various other meetings. They may also be called upon to act as spokespersons for the association at functions of IAAO and its chapters and affiliates.

Voting Regions

Board members are elected from three regions. The regions are identified as Region 1, Region 2, and Region 3. Voting region information is available at IAAO.org.

What's Next?

To start your candidacy, go to the IAAO website at IAAO.org under About Us/Executive Board/Elections for information about the process, an application and the election schedule. All candidate filings will be completed online. If you have questions about candidacy, or the election process in general, please feel free to contact the Nominating Committee Chair, W.A. (Pete) Rodda, CAE, RES, at pastpresident@iaao.org.

Take the first step on your pathway to professional excellence as a leader in IAAO.

International Association of Assessing Officers Executive Board 2017 Election Calendar

Action	Deadline
Candidate questionnaires must be completed and submitted to the Executive Director for distribution to the Nominating Committee. Candidate profile forms and photographs must be submitted to the Executive Director for inclusion with the official ballots.	Saturday, July 1
Nominating Committee meeting to plan for candidate interviews. Nominating Committee conducts any needed candidate interviews via telephone.	Prior to August 1
Slate of nominated candidates is certified by the Nominating Committee Chair to the Executive Director and publicized as soon as possible in an IAAO publication. List of selected candidates is posted to the IAAO website as soon as candidates are notified.	Tuesday, August 15
Individuals wishing to be nominated by petition must submit completed petitions to the Executive Director within five (5) days of the end of annual conference.	Monday, October 2
Election in progress. Ballots and profiles shall be sent electronically to all regular members by November 1. A separate ballot shall be sent electronically to all associate members in the year for which an election for the Executive Board associate member position occurs and shall contain only the candidates for the Executive Board associate member position.	November 1–30
Election campaign reports must be filed with the Executive Director.	Thursday, December 7
Candidates wishing to challenge the election results must transmit challenges to the Executive Director.	Sunday, December 31
Election results shall be certified at the first Executive Board meeting following the December 31 challenge deadline or the first meeting after any challenge is resolved. The vote to destroy the ballots occurs.	After December 31

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IAAO
International Association of Assessing Officers
Valuing the World

FAIR & EQUITABLE
MAY 2017 • VOLUME 15, NUMBER 5

Fair & Equitable is published monthly by the International Association of Assessing Officers, 314 W 10th Street, Kansas City, Missouri 64105-1616. Subscription rate for members is included in annual dues. Nonmember subscriptions are $140 annually. Individual issues are $10 plus shipping and handling. Send address changes to: Membership Department, International Association of Assessing Officers, 314 W 10th Street, Kansas City, Missouri 64105-1616. Send correspondence to the address above. Website: IAAO.org

Registration Opening for International Symposium

Registration opens soon for the International Research Symposium, October 30–31, in Madrid, Spain.

The symposium follows last year's successful symposium in Amsterdam, offering an exploration of the intersection of public policy and mass appraisal standards, guidance, and implementation challenges.

The focus will be on the exchange of research and knowledge for continuous improvement of property tax systems worldwide. On October 29 there will be an optional half-day forum, "Automated Valuation Models and GIS—Methods, Applications, and Standards in Valuation."

The symposium will take place at the Melia Madrid Princesa Hotel, and online registration is now open at www.iaao.org/IRS2017.

The early bird registration fee is $650 for IAAO members and $700 for nonmembers. After September 5, fees increase to $775 and $825, respectively.

IAAO is working to make this an annual event, and preliminary plans are underway for a symposium in the spring of 2018 in Prague, Czech Republic.

Education Fees to Increase June 1

Effective June 1, fees for several IAAO examinations, candidacy applications, and all student reference manuals (SRMs) will increase. All applications received after June 1 will be subject to the price increases.

The Retake Exam application fee will be $150 for both IAAO members and nonmembers.

The Challenge Exam application fee will be $300 for nonmembers, $100 for candidates for an IAAO designation, and $150 for IAAO members.

The fee for the Designations Case Study Retake Exam will be $150.

The Candidacy Application fee, set at $35 since 2008, will increase to $50.

Fees for SRMs for five-day courses will be $100 for members and $175 for nonmembers.

Fees for SRMs for workshops will increase to $75 for members and to $150 for nonmembers.

Focus of June Webinar on Becoming a Mobile Assessor

"Becoming a Mobile Assessor" is the focus of a 2-hour June webinar, set for Wednesday, June 21, at noon CDT.

The Cibeles Fountain is a prominent landmark in the center of Madrid, Spain.

Field appraisers are mobile by nature; therefore the data should be mobile with them. However, just going mobile or paperless is not enough.

To truly realize all the productivity gains and cost savings possible, an integrated mobile solution is needed.

The webinar discusses differences between mobile and integrated mobile including the importance of work flow, reporting, real-time field tracking, and quality control—backed up by examples and productivity stats courtesy of the Travis Central Appraisal District in Austin, Texas.

Register online at www.iaao.org/webinars. Registration is still open for the May 17 webinar, "Deliver Compelling and Captivating PowerPoint Presentations."

Payment by Electronic Check Now Available on IAAO Website

IAAO recently added the option of paying by bank account on the IAAO website for products, events, or educational courses.

On the Enter Payment screen, visitors can now select Credit Card or Electronic Check/ACH.

For the Electronic Check/ACH option, the funds can be withdrawn from a personal or business bank account.

If payment is through a personal account, a driver's license number is required. If payment is through a business account, a U.S. Tax ID is required.

Currently the checking account option is available only for those using United States-based checking accounts.

New Conference Programs Focus on Casino Valuation, Comparables, and Assessments for Nonassessors

Three special educational programs are being offered in conjunction with the IAAO Annual Conference in Las Vegas.

Assessment for Nonassessors takes place on Saturday, September 23, from 1:00 to 5:00 p.m. The program is designed for staff members in assessment offices who are not involved in appraisal of property. Conference registration is not required, and the fee is $25.

Unwrapping the Secrets to Hotel Casino Valuation: A Las Vegas Perspective is scheduled for Saturday, September 23, from 8:00 a.m. to 5:00 p.m. The program includes a back-of-the-house tour of a prominent hotel casino property. Conference registration is required, and the program fee is $125 for members and $220 for nonmembers.

Understanding and Using Comparable Transactions is scheduled for Wednesday, September 27, from 1:00 to 4:00 p.m. and Thursday, September 28, from 8:00 a.m. to noon. The program is being presented to enhance the understanding and use of comparable properties. Conference registration is required, and the fee is $125 for members and $220 for nonmembers.

www.IAAO.org/conference

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From the President

Randy Ripperger, CAE

Dear IAAO Members,

The feature story in this issue describes a new and innovative approach to the deployment of mass appraisal models into CAMA systems using Predictive Model Markup Language (p. 18). The article is more about the process than the technical details and offers insights that could be applicable to any number of jurisdictions. The presentation on this topic was given at the 2017 GIS/CAMA Technologies Conference and was well received there.

AARO, AQB, and Other Meetings

The Association of Appraiser Regulatory Officials (AARO) held its spring conference April 7–9, 2017, in Tampa, Florida. Jake Parkinson, Lisa Hobart, PPS, and Larry Disney copresented a session, "Accepting Mass Appraisal Experience for Credit. Does AQB Criteria Allow It? Is It *USPAP* Compliant? Competency Testing?"

Mr. Parkinson is chair of the IAAO *USPAP* Subcommittee, and Ms. Hobart, PPS, also an IAAO member, is a trustee of The Appraisal Foundation (TAF). TAF provides oversight to the Appraisal Practices Board (APB), Appraiser Qualifications Board (AQB), and the Appraisal Standards Board (ASB). Mr. Disney is also a trustee of TAF, former Executive Director of the Kentucky Real Estate Appraisers Board, and a Past President of AARO.

The issue of recognizing mass appraisal experience for state licensing and certification programs is of interest to IAAO; thus IAAO's participation in the AARO Spring Conference is an important initial step.

Representatives of the IAAO Mass Appraisal Task Force met with the AQB in Tampa at the AQB Public Meeting on April 7, 2017. Meeting attendees discussed the third exposure draft of proposed changes to the Real Property Appraiser Qualification Criteria with topics as follows:

- Degree Requirement for Licensed Residential and Certified Residential. Section 1 of this document addresses college-level education requirements for the Licensed Residential and Certified Residential classifications.
- Practical Applications of Real Estate Appraisal. Section 2 of this document addresses the development of specific module guidelines for the Practical Applications of Real Estate Appraisal, including proposed changes to Guide Note 4 (GN-4) of the Criteria. The modules would be designed for use by colleges and universities, professional organizations, proprietary schools, and appraisal firms.
- Experience Requirements. Section 3 of this document contains proposed revisions to the current hours and time frames required for the Licensed Residential, Certified Residential, and Certified General classifications, as presented in the second exposure draft.

The Florida Chapter of IAAO (FCIAAO) celebrated its 30th anniversary at its 2017 Annual Conference, April 26–28, 2017. IAAO President-Elect Dorothy Jacks, AAS, represented IAAO in the opening session. The event featured education tracks on real property, exemptions, and IT/GIS. With approximately 930 members, FCIAAO is one of the largest chapters of IAAO. Congratulations to FCIAAO on 30 years of success.

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FAIR & EQUITABLE

MAGAZINE OF THE INTERNATIONAL ASSOCIATION OF ASSESSING OFFICERS

SUBSCRIPTIONS
Subscriptions to *Fair & Equitable* are complimentary for members of the International Association of Assessing Officers. Nonmember subscriptions are available for $140 annually. For information on becoming a member, contact the Membership Director, at 816/701-8100 or membership@iaao.org. Further information is also available at IAAO.org.

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EDITORIAL SUBMISSIONS
Send a Word or rich text format (RTF) file of your manuscript to Christopher Bennett, bennett@iaao.org. A letter stating that the paper has neither been published nor is under consideration elsewhere must accompany the submission.

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China

No signs of a property tax in China, despite fears of a housing bubble
(published March 20, 2017)
by Miriam Hall, *The Real Deal*

Article discusses the lack of plans to institute a property tax in China to address the issue of uncontrolled increases in property values because of speculative buying by investors. The National People's Congress, the body that would make the decision, has declined to include it on its agenda for 2017. Meanwhile, Chinese investors are buying real estate abroad.

https://therealdeal.com/2017/03/20/no-signs-of-a-property tax-in-china-despite-fears-of-a-housing-bubble/

Thailand

Impact of revised property tax
(published March 28, 2017)
by DBS Bank Group Research

Article discusses changes to the Land and Building Tax in Thailand. The new tax is based on asset value and requires the Treasury Department to complete valuation of 32 million land plots by the end of 2017 so it can be implemented in 2018. The tax discourages property owners from keeping lands idle.

https://www.dbs.com/aics/templatedata/article/generic/data/en/GR/032017/170328_insights_impact_of_revised_property_tax.xml

New York

Faso plan to cut property taxes included in American Health Care Act
(published March 21, 2017)
by U.S. Congressional Representative John J. Faso

Press release discusses an amendment to the American Health Care Act that would eliminate New York State's ability to mandate Medicaid costs for local county property taxpayers. The amendment, if enacted, would provide significant relief in the form of reduced property taxes.

http://faso.house.gov/news/documentsingle.aspx?DocumentID=207

Michigan

Should big-box stores pay more property taxes?
(published March 25, 2017)
by David Eggert, Associated Press, *Detroit Free Press*

Article discusses the dark store controversy in Michigan and efforts to get a bill reconsidered that would require valuation of big-box properties by the cost less depreciation method rather than using sales of empty stores as comparables for determining value. The Michigan Chamber of Commerce and groups representing retailers, grocers and manufacturers oppose the bill. Communities that are losing revenue as a result of lower valuations support the bill.

http://www.freep.com/story/money/business/michigan/2017/03/25/michigan-big-box-stores-taxes-legislation-/99615690/

Scotland

Property tax leaves £100m hole in Scotland's finances
(published March 26, 2017)
by *The Herald*

Article discusses the Land and Buildings Transaction Tax in Scotland, which replaced a stamp duty tax. The tax was intended to increase revenues based on sales of higher value properties. A slump in sales of higher end homes and commercial properties has resulted in a predicted deficit in Scotland's finances for this fiscal year.

http://www.heraldscotland.com/news/15182076.Property_tax_leaves___100m_hole_in_Scotland___s_finances/

Wisconsin

Big box stores gird for battle with Wisconsin cities
(published March 19, 2017)
by The Associated Press, *WTOP*

Article discusses plans to introduce legislation in Wisconsin to close so called "dark store" loopholes in the law that allow big-box stores to be valued as if they were closed and vacant. The proposed legislation is backed by the League of Wisconsin Municipalities and opposed by the state chamber of commerce and large retail giants.

http://wtop.com/government/2017/03/big-box-stores-gird-for-battle-with-wisconsin-cities/

Pennsylvania

Court ruling sets off property-tax 'dynamite' in Delco. Will other counties feel heat?
(published March 31, 2017)
by Laura McCrystal and Justine McDaniel, *The Inquirer*

Article discusses a property tax appeal claiming inequitable assessement of a property in Delaware County, Pennsylvania. The presiding judge ordered the county to reassess 200,000 properties for the first time in 20 years. The article goes on to document examples of extreme differences in assessed value of comparable properties.

http://www.philly.com/philly/news/pennsylvania/reassessment-delaware-county-pennsylvania-new-jersey-suit.html

New Member Profile: Shannon Wheeler

Kate Smith

Shannon Wheeler
Appraiser III (Commercial)
Boulder County Assessor's Office
Boulder, Colorado

Q. *How did you start working in the property assessment profession?*

I started working in the assessment profession following a number of years of commercial appraisal work in the private sector. Specializing in commercial hospitality assets, I was traveling frequently and working from a home office. I began to think that the public sector might be a good fit for a more consistent and stable work–life balance, so I began to seek potential assessment positions within an assessor's office.

Q. *What about your role do you enjoy most?*

I am a big fan of numbers and analysis. Working in the public sector delivers a wealth of opportunity for analyzing a diverse mix of property types.

Q. *What about your role is the most challenging?*

Being new to the assessment world, I find it challenging to blend mass appraisal practices with the appraisal techniques that I was so accustomed to. There is still a lot to learn on my end, and I look forward to it.

Q. *What would you be doing if you weren't in a property valuation-related job?*

This question is easy to answer. I would be living in the Caribbean and teaching people how to scuba-dive. A little more than a decade ago, my aunt and uncle (both avid divers) encouraged me to get my open water certification while on a trip with them in Panama. I now hold a PADI (Professional Association of Diving Instructors) Divemaster certification and dive every chance I get. I look forward to getting my instructor certification in the coming years.

Q. *If IAAO members visit your city, what should they do there and why?*

The "Republic of Boulder" is a great place to visit. If you are outdoorsy, then you have to hit the big hiking spots, such as Chautauqua Park and Mount Sanitas. If you feel like a bigger treat, then you could always try and tackle one of Colorado's 14er's (14,000+ foot mountain peaks). There are 58 to choose from and a number near the Boulder area. If you feel like relaxing, then be sure to take a stroll down Pearl Street Mall or take an easy drive along Peak-to-Peak Highway. Be sure to visit some local restaurants as well. You won't be disappointed.

Q. *What are your main interests or hobbies outside of work?*

I enjoy hiking in the mountains and on local trails with my wife, toddler son, and two Pointers. I also have a passion for scuba-diving and try to head down to the Western Caribbean annually for a dive trip. During the winter, I enjoy snowboarding at local ski areas.

 (continued from p. 3)

The Summit of the Americas Conference of the Royal Institution of Chartered Surveyors was held in Chicago, May 1–3, 2017. IAAO is maintaining close ties with this organization and will report on relevant interactions and discussions at the event.

Dark Store Controversy

On May 26, 2016, the State of Michigan Court of Appeals issued a published decision that reversed and remanded a Michigan Tax Tribunal decision rejecting an assessment of a Menard's property in the City of Escanaba, Michigan. The court's decision was based on a determination that the tribunal made an error of law and its decision was not supported by competent, material, and substantial evidence. In the original decision of the tribunal, amicus curiae (friend of the court) briefs were submitted by the Michigan Municipal League, Michigan Townships Association, Michigan Association of School Boards, Michigan School Business Officials, and the Michigan Association of Counties in support of the Respondent-Appellant, the City of Escanaba. The Michigan Manufacturers Association also filed an amicus curiae brief presenting an opposing view.

On a subsequent application for leave to appeal to the Michigan Supreme Court, the court is accepting supplemental briefs addressing, "(1) whether the Court of Appeals exceeded its limited appellate review of a decision of the Michigan Tax Tribunal; and, if so, (2) whether the Michigan Tax Tribunal may utilize a valuation approach similar to that recognized in *Clark Equipment Company v Leoni Twp*, 113 Mich App 778 (1982)."

On April 4, the IAAO Executive Committee voted to join the Michigan Assessors Association and the Michigan Association of Equalization Directors in filing amicus curiae briefs. On April 10, the IAAO Executive Board ratified the Executive Committee's action.

The case is being litigated for the Respondent-Appellant, the City of Escanaba, by Jack L. Van Coevering, who has been active in defending assessment jurisdictions in Michigan. This case represents a possible turning point in how big-box stores are valued for property tax purposes. The essence of the decision is whether big-box stores can be valued using the sales comparison approach with comparables that are vacant and subject to deed restrictions or whether the cost-less-depreciation approach is more valid.

IAAO 2016 Assessment Industry Compensation Survey

On a brief note, I recently purchased the IAAO 2016 *Assessment Industry Compensation Survey*. I found the information in the report to be comprehensive and well worth the investment. The survey narrative provides insights into keys for professional success. Select information from the survey was shared in two articles in the April *Fair & Equitable* ("Changing of the Guard Revisited," p. 26, and "Professional Trends among U40s in the Assessment Industry: Insight from the 2016 Salary Survey," p. 23). There is much more information in the published report. I wholeheartedly recommend this product after personally reviewing the content. I also thank IAAO Research Manager Margie Cusack for her skillful interpretation in the narrative.

Other News

It is time for qualified members to consider candidacy for the 2018 Executive Board. The Call for Candidates is open now. See the inside front cover of this issue for more information.

The Board met April 21–22 in New Orleans, Louisiana. The agenda included discussion of the Vision 2020 Strategic Plan and how the Executive Board perceives its evolution. Updates on Board activities will be included in the June issue.

Sincerely,

Randy Ripperger, CAE

IAAO Conferences, Seminars, Meetings, and Webinars

Event	Location	Dates
Deliver Compelling and Captivating PowerPoint Presentations	Online Webinar	May 17, 2017
Becoming a Mobile Assessor	Online Webinar	June 21, 2017
Executive Board Meeting	Boston, Massachussetts	July 14–15, 2017
IAAO 83rd Annual International Conference on Assessment Administration	Las Vegas, Nevada	September 24–27, 2017
Fall Leadership Days	Kansas City, Missouri	October 20–21, 2017
International Research Symposium	Madrid, Spain	October 30–31, 2017
Executive Board Meeting	San Francisco, California	November 17–18, 2017
38th Annual Legal Seminar	Seattle, Washington	December 7–8, 2017
Spring Leadership Days	Kansas City, Missouri	February 9–10, 2018

Sandra Patterson

Religious Exemptions

With religious organizations increasingly offering their facilities to functions outside the traditional uses of a house of worship, questions arise as to where to draw the line between accepted exempt and taxable uses. In a recent case involving a religious shrine, the Massachusetts Supreme Court offered its thinking on the issue.

The case involved a shrine operated by a Catholic religious order. Among the worship and instructional opportunities the shrine offers are a daily mass, specialized prayer services and lectures, and the availability of confession. During the Christmas season, the shrine puts on a festival of lights which alone attracts an estimated 400,000 visitors. Pilgrims to the shrine travel not only from the United States but internationally as well. Many visitors spend most of the day at the shrine.

Occasionally, the shrine holds fundraising events on the grounds. Some of these fundraisers are in partnership with third parties. It also allows other nonprofit, religious, and public groups to host their events on the property as well as rents its facilities to private groups and individuals for functions such as sales meetings and wedding receptions. The annual festival of lights as well as certain areas of the grounds attract visitors from the general public.

Massachusetts law grants a property tax exemption to houses of religious worship owned by religious organizations including related property such as parking lots and parsonages. However, the law stipulates that the exemption does not extend to any portion of the house of worship "appropriated for purposes other than religious worship or instruction." Incidental or occasional use by "an organization exempt from taxation" is not considered an appropriation under the terms of the statute.

The 199-acre site was divided into eight portions for assessment purposes. Four portions—the shrine's main church, the indoor and outdoor chapels, the monastery, and the retreat center—were deemed tax-exempt. A fifth portion—the Welcome Center, which includes a cafeteria, a gift shop, and meeting space—was determined to be used 60 percent for religious purposes and 40 percent by outside groups; its value was apportioned between tax-exempt and taxable uses. The three remaining areas—the maintenance building, a former convent leased as a safe house for battered women, and a wildlife sanctuary operated under a conservation easement agreement with the state Audubon Society—were determined to be fully taxable.

For the four areas of the property in dispute, the court ruled that the Welcome Center and the maintenance building were exempt and the former convent and the wildlife sanctuary were taxable. The following explores the court's reasoning behind these determinations.

Welcome Center. A video presentation at the Welcome Center marks the start of the visit for most pilgrims to the shrine. The center also contains a cafeteria where visitors can obtain lunch and a bistro with a limited menu but more extensive hours. There is a gift shop in the building where religious objects and books can be purchased. Other rooms host prayer services and special lectures. This building and the surrounding grounds serve as the principal site of the shrine's fundraisers. It is also the facility that is rented to outside groups.

Although the center is used for both religious and nonreligious purposes, the court explained, it was not correct to divide the building's value into exempt and taxable portions based upon an estimation of the use for each purpose. Under the statute, the exemption is based on the either-or proposition of whether the dominant use of the building is religious worship and instruction, the court said. A video presentation about the shrine serves as religious instruction. The availability of food and drink in the cafeteria and bistro "accompany[ies] and supplement[s]" the shrine's religious purpose because it enables visitors, many of whom spend the day, to obtain sustenance without having to leave the premises or bring their own. The gift shop permits visitors, inspired by their experience, to purchase religious items that allow them to continue their religious worship and instruction at home. That the shrine earns money from these activities does not alter their character as religious worship and instruction, the court said. "Even a church cannot live by prayer alone."

Similarly, the court found that the shrine's other fundraising activities would not run afoul of the statute's prohibition of "appropriat[ion] for purposes other than religious worship or instruction." The statute specifically allows "incidental or occasional use" by nonprofit, religious, and public organizations. Further, the court believed it was reasonable to assume that this clause covered occasional use by private individuals and organizations as well. This provision should be read, the court said, as the legislature providing reassurance to religious institutions that they will not be risking their tax exempt status if they allow the occasional wedding reception or meeting of an outside organization to use their facilities.

For these reasons, the Welcome Center is exempt.

Maintenance building. This structure is used to store the 400,000 lights strung for the festival of lights, inventory for the gift shop, and the golf carts and other vehicles and equipment used to maintain the grounds. The festival of lights is part of the shrine's celebration of Christmas, so storage of the lights is related to the purpose of religious worship, the court said. The gift shop offerings allow visitors to extend their visit to their everyday religious practice and instruction, so the inventory is related to religious worship and instruction. The vehicles and equipment enable staff to maintain the shrine buildings and surrounding grounds and to clear snow and ice from the parking lot. Thus, these activities support the religious worship and instruction conducted there, the court stated.

The maintenance building serves essentially the same purpose as a basement room or storage shed in a smaller church, the court said. The maintenance building is therefore tax-exempt.

Convent. The shrine leased the former convent to a nonprofit organization that operates a safe house for battered women there. The shrine claimed that providing space for such a service was part of its religious mission of performing charitable works for the community. Alternatively, it contended that the use of the vacant building as a women's shelter was incidental to the property's overall purpose as a place for religious worship and instruction.

The court reminded that the all-or-nothing dominant-purpose test for the house-of-worship exemption does not apply to the property as a whole. The statute specifically excludes from exemption "any portion of any such house of religious worship appropriated for purposes other than religious worship or instruction." This language implies that the dominant purpose of the shrine's various facilities must each be considered on its own merits, the court said. Further, the same statutory provision makes clear that only those portions of the property related to religious worship and instruction can qualify for this exemption.

The nonprofit organization's services, however, were more properly categorized as charitable work, the court said. Because the lease granted "permanent and exclusive" use of the convent to the nonprofit organization, the organization's use could not be considered temporary or incidental.

Since the convent has been clearly "appropriated for purposes other than religious worship or instruction," the building is taxable.

Wildlife sanctuary. The shrine has devoted nearly 110 acres of its property to open space and walking trails. Under the shrine's agreement with the state Audubon Society, the wildlife sanctuary is open to the public but the shrine retains access rights to the area. The shrine argued that the sanctuary represented religious worship because the trails were used for meditative walks. Any secular use by the general public was incidental to this purpose.

While the court acknowledged that some may find the area "a spiritual sanctuary," by turning over management of the wildlife sanctuary to the society and permitting it to give unfettered access to the public, the shrine had granted "permanent and exclusive" use of the area to an outside organization. As with the convent, the shrine had appropriated the area for purposes other than religious worship or instruction.

The wildlife sanctuary is taxable.

Although the convent and the wildlife sanctuary did not qualify for exemption as houses of worship and religious instruction, the court advised that they may qualify under the provision that exempts property owned by a charitable organization put to charitable use.

(*Shrine of Our Lady of La Salette, Inc. v. Board of Assessors of Attleboro*, Supreme Judicial Court of Massachusetts, SJC-12021, March 22, 2017)

Tax Benefits and Ownership Status

A single-owner limited liability corporation does not equate to individual ownership when it comes to qualifying for certain state property tax benefits, the Minnesota Supreme Court has ruled.

The litigation arose over denial of benefits under the state's Green Acres statute. The statute permits land in agricultural use close to urban centers to be valued according to its agricultural use rather than its market value. The classification is available to land owned by individuals. Corporation ownership also is permitted if the land is a family farm or if the majority of the corporation's owners are related and at least one member lives on the land or actively farms the property.

The taxpayer owned several properties contiguous to the subject property. Eight parcels were held in the owner's own name while the ninth was held in a single-owner LLC. All nine properties were participating in the Green Acres program.

The subject parcel was held in a single-owner LLC as well, but it was a different corporate entity from the other LLC. The taxpayer stated he chose this ownership structure to shield himself from personal liability. Of the subject property's 40 acres, 8 acres were leased for hay production and another 2 acres contained a noncommercial apple orchard. The taxpayer did not live on the property.

The subject parcel does not qualify for the more favorable agricultural valuation, the court said, because it is owned neither by an individual nor by one of the types of corporate entities specified in the statute. According to "the weight of dictionary authority," the court explained, an individual is defined as a single natural person. The statute also makes clear distinctions between the actions of individuals and those of legal entities, which further supports the interpretation that the term *individuals* is meant to refer to natural persons, the court said.

Further, even though the statute encourages broad interpretation of its provisions, it nevertheless provides a specific list of ownership types that qualify for the tax benefit. If the court were to determine that ownership by a single-owner LLC equates to that of an individual, it would grant benefits to a new class of property ownership the legislature had omitted from the statute. If the legislature had intended single-owner LLCs to be considered as individuals, the court said, it would have included that wording in the Green Acres statute as it did in the property tax exemption statute.

The participation of the other LLC-owned parcel in the Green Acres program also has been called into question by the assessor's office.

(*Strib IV, LLC v. County of Hennepin*, Minnesota Supreme Court, A16-0423, November 9, 2016)

IAAO Library Subject Guide—Room-Sharing Economy

Introduction

The Room Sharing Economy is a business that is not going away and has been able to thwart all attempts to prevent its ability to operate in any country, state, county or city. Even in areas where room sharing is restricted, most hosts will risk violating local laws to operate. Almost all jurisdictions have come to terms or made deals with Airbnb rather than fight the inevitable. Further study is needed in the assessment field on the change in home values in areas of concentrated Airbnb hosts, the change in hotel values due to short term rentals concentration, and how to determine situs addresses of Airbnb properties for proper classification by the assessor.

Articles and Books in the LibraryLink Catalog

(Log in to LibraryLink to download the full text or to request from the library.)

Engaging the new economy businesses in San Francisco. October 2016. Augustine, David. *Government Finance Review* v. 32 n. 5: 30-32.

To regulate or to ban: an update on the vacation rental dilemma in coastal California. Fall 2016. Ruby, Susan L. *Real Estate Review*, v. 45 n. 3: 71-86.

Up close and personal: reflections on Airbnb and the sharing economy. Winter 2016. Cannon, Jeffrey A. Real Estate Review, v. 45 no. 4: 59-73.

Vacation rental housing dilemma in coastal California. Fall 2015. Ruby, Susan L. Real Estate Review, v. 44 n. 3; 71-97.

Who benefits from the "sharing" economy of Airbnb? April 2016. Presented at the 25th International World Wide Web Conference by Giovanni Quattrone, et. al. in Montreal, Canada.

Online Reports and Articles

Airbnb: a case study in occupancy regulation and taxation. 2015. Nadler, Michael L. and Roberta A. Kaplan. *University of Chicago Law Review Dialogue*. Available at: https://lawreview.uchicago.edu/sites/lawreview.uchicago.edu/files/uploads/Dialogue/Kaplan_Nadler_Dialogue.pdf

Can short term rental arrangements increase home values?: A case for AirBNB and other home sharing arrangements. 2015. Jefferson-Jones, Jamila. *Cornell Real Estate Review* 13 (1), 10 pp. Available at: http://scholarship.sha.cornell.edu/cgi/viewcontent.cgi?article=1133&context=crer

Could you bnb my neighbor? A planner's take on the sharing economy. February 2016. Goodman, Jeffrey. *Planning* 82 (2), 29-33. Available at: https://www.planning.org/planning/open/2016/bnb.htm

Economic impact of transient vacation rentals (TVRs) on Maui County. 2008. Loudat, Thomas and Prahlad Kasturi. Realtors Association of Maui. Available at: http://www.ramaui.com/UserFiles/File/Governent_Affairs/EconomicImpactTVRsJan2008.pdf

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Rise of the sharing economy: Estimating the impact of Airbnb on the hotel industry. November 2016. Zervas, Georgios, et. al., Boston University. Available at: http://people.bu.edu/zg/publications/airbnb.pdf

Short term rentals (STR), AirBNB and VRBO in Stonington. 2016. Economic Development Commission, Town of Stonington, Rhode Island. Available at: https://drive.google.com/file/d/0BwRAHBUmFfNUkxSU2dsNVNPdjg/view

Websites

AirBnB Analytics—proprietary data and insights on Airbnb. https://www.airdna.co/

Field Guide to Short Term Rental Restrictions. National Association of Realtors online guide to the short-term rental debate. https://www.nar.realtor/field-guides/field-guide-to-short-term-rental-restrictions

Short Term Rental Advocacy Center. Promotes best practices in short term rental regulation. http://stradvocacy.org/

Top 5 Room Sharing Sites

Airbnb www.airbnb.com

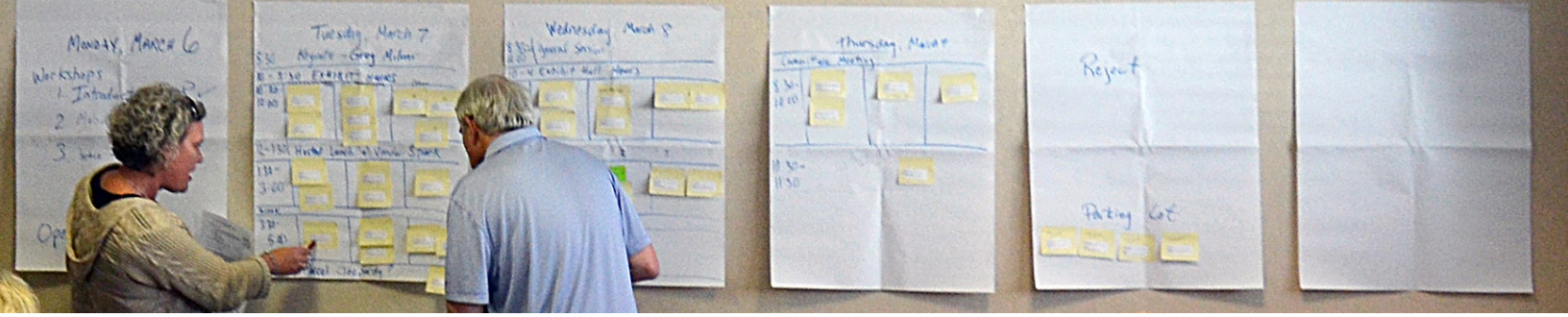
FlipKey www.flipkey.com

HomeAway www.homeaway.com

VacationRentals www.vacationrentals.com

VRBO www.vrbo.com

The online version of this subject guide can be downloaded at www.iaao.org⇒Resources⇒Research Library⇒Research Tools⇒Subject Guides.



Education, Networking, Technology, and Integration—The GIS/CAMA Technologies Conference Has It All

The 21st Annual GIS/CAMA Technologies Conference, jointly presented by the Urban and Regional Information Systems Association (URISA) and IAAO, was held March 6–9, 2017, in Chattanooga, Tennessee. It is one the best venues to share innovative ideas and discover new ways to use technology. The conference also presents an opportunity for jurisdictions to converse with industry partners about the tools they need to be more productive.

Rachel Parrinello, GISP, the 2017 Conference Planning Chair, expressed her enthusiasm for the conference:

> *After 21 years, the 2017 GIS/CAMA Technologies Conference was once again a success—new professional connections were made; GIS applications, administrative practices, and valuation models and work flows were shared; and lots of brainstorming happened. We had fun and fellowship at an excellent social event; we found inspiration via excellent plenary speakers; and we saw exciting new products and services from industry partners. Chattanooga was a great host city!*

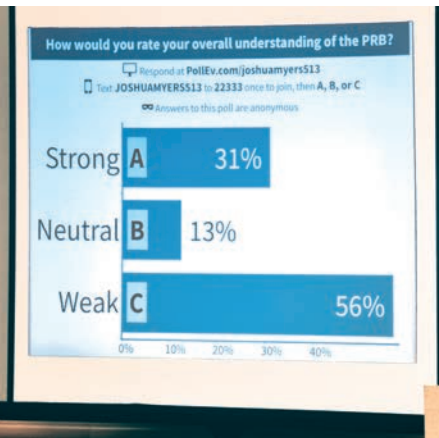
Daniel Cypert, RES, the 2018 Conference Planning Chair, is looking forward to next year's conference:

> *Houston—we have a solution! The Conference Content Committee is already preparing for next year's conference in Houston, Texas, March 19–22, 2018. This conference is a must if you want to see how current (and future) GIS technologies are integrated with the CAMA systems used by appraisers, modelers, and assessment professionals. Learn how to create more accurate assessments and be more efficient in tax administration. Become better prepared for damage assessments in the event of a natural disaster.*
>
> *This is one of the best conferences for networking with peers. For those who want to spend extra time in the Houston area either before or after the conference, there are many things to do—the NASA Space Center Houston, Museum of Natural Science, Museum of Fine Arts, Galveston, to name a few. Houston is an easy city to get to. With many direct flights and a warm climate in March, we are expecting* big *attendance. As they say, 'Everything is* big *in Texas.'*

The Texas Association of Appraisal Districts (TAAD, an IAAO chapter) has a strong presence in the state with membership by appraisal district. There are approximately 3,500 employees in the 254 county appraisal districts in Texas. That is a large base of networked people who will spread the word about the benefits of the GIS/CAMA Technologies Conference. The Planning Committee expects to attract many high-quality presentations and make it the best conference since its humble beginnings in 1997 in Savannah, Georgia.

IAAO and URISA look forward to hosting the event in this prime location and sharing the tremendous knowledge and technological opportunities that are a hallmark of the conference.

Left page top, Rachel Parrinello, GISP, and Alex Hepp (Cyclomedia) participate in a Planning Committee meeting in October 2016; left page bottom (l to r), Josh Myers compares the PRD and PRB measures of vertical equity, and Paul Bidanset presents travel calculations in R. Right page top row, keynote speaker Greg Milner discusses GPS and how it affects society; second row (l to r), National Parcel Database Summit and Andrew Rogers explains the Chattanooga Enterprise Center. Third row (l to r), IAAO Research Manager Margie Cusack discusses tax increment financing and Rebecca Malmquist, CAE, discusses leadership and emotional intelligence. Bottom row (l to r), Daniel Fasteen, Ph.D., discusses uses of street-level imagery; bottom row right, Scott Fiedler discusses the use of advanced technologies and GIS at the Tennessee Valley Authority.

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"Power is really a secondary matter.... TVA is primarily intended to change and to improve the standards of living of the people...."
President Franklin D. Roosevelt

A New Role for IAAO: Partnership with the World Bank

Margie Cusack

As reported in the April edition of *Fair and Equitable* ("IAAO Is a Partner with the World Bank at Land and Poverty Conference," p. 42), the 18th Annual Land and Poverty Conference of the World Bank was held at the bank's headquarters March 20–24, 2017, in Washington, D.C. IAAO had the honor of being named a partner by the World Bank for the conference.

Almost an Overwhelming Experience

IAAO President Randy Ripperger, CAE, and I were both first-time attendees. I asked President Ripperger to describe his participation; his response sums up and encapsulates the conference for all of us:

> *I think regarding my experience at the World Bank, I can relate to the following quote from Albert Einstein: 'The more I learn, the more I realize how much I don't know.'*

The first thing a new attendee must conquer is figuring out what sessions to focus on because the conference program is huge. Conference content includes hundreds of speakers from all over the world so multiple concurrent sessions were constantly going on. The conference theme was, "Responsible Land Governance—Toward an Evidence Based Approach." Sixty-minute sessions usually comprised four rapidly talking speakers, so the entire conference was fast-paced and energizing.

Government officials described the trials and experiences of their countries as they diligently work to create land administration systems. The ultimate goal for participants was universal—the creation of efficient and effective property tax systems to help in economic development and a wide variety of planned public programs.

Identifying Land Ownership

Several countries are just starting to identify property lines by using a variety of creative property measurement methods and solutions. Numerous geographic information system (GIS) technologies, from electronic mapping tools to handheld measurement tools, have played a huge role in enabling cost-effective solutions for creating electronic land records.

Identifying land ownership is also a big challenge in countries where informal land transfer methods have been the historical practice. We learned about the hurdles facing developing countries in their efforts to increase citizen trust in public land recording and their ingenious methods to ensure progress. Creating efficient land administration systems is a very difficult process that can only be achieved over time through sound tax policy, long-range strategic planning, and public support.

Charlie Colatruglio presents "Mass Appraisal of Land Values: Where Do We Begin?"

Countries that are working to establish land administration systems were very curious to learn more about IAAO. After every IAAO presentation or meeting held with representatives from various countries, strong interest was shown in IAAO ethics, standards, educational and technical assistance offerings, and the international library, as many countries are moving forward and thinking about the next phases of advanced property tax system development. It was the strong hope of attendees that the establishment of good governance through sound property tax policy will improve local property collection rates to further develop their countries.

IAAO Presenters

IAAO presented a total of seven sessions at this event:

- President Ripperger, CAE, moderated sessions on experience with land valuation.
- Larry Clark, CAE, IAAO Director of Strategic Initiatives, presented "Body of Knowledge."
- Charley Colatruglio, CAE, IAAO Technical Assistance Manager, participated in a roundtable discussion, "Valuation of Unregistered Land," moderated by Christopher Barlow (Thomson Reuters).

James Kavanagh, Director of RICS Land Group presents "Standards for Land Administration: Ensuring Interoperability."

- Mr. Clark and Mr. Colatruglio also presented an overview of the cost approach to value in "Mass Appraisal of Land Values: Where Do We Begin?"
- Mr. Clark presented a third time with Brent Jones (ESRI) on "Low Cost Valuation Methodologies with Excel and ArcGIS Online."
- I presented both "Practical Applications of IAAO Standards for Land Administration and Property Tax Systems" and "Workable Solutions for Property Tax Reform" with Richard Almy (Almy, Gloudemans, Jacobs and Denne).
- In addition, Paul Bidanset, City of Norfolk, Virginia, Chair of the IAAO U40 Leadership Lab, copresented with Peadar Davis, Michael McCord, and William McCluskey, "Improving Land Valuation Models in Sparse Markets: A Comparison of Spatial Interpolation Techniques used in Mass Appraisal."

IAAO Takeaways

IAAO World Bank conference veterans Mr. Clark and Mr. Colatruglio had similar takeaways from this year's experience.

Mr. Clark commented,

> *Considering this was only the second year IAAO has participated in the conference, I was very pleased with our reception and the interest shown in IAAO programs. The possibilities for future work with member countries are enormous.*

Mr. Colatruglio seconded this thought by adding,

> *The World Bank Land and Poverty Conference is a tremendous opportunity for IAAO to share its mass appraisal expertise with many countries in the developing world. The developing world is looking for innovations to their existing taxation and property valuation systems to improve their ability to provide local services to their communities that we sometimes take for granted. IAAO can also learn from these countries by finding new ways to adapt mass appraisal principles, methodologies, and best practices to the realities of the developing world.*

IAAO Research Manager Margie Cusack presents "Practical Applications of IAAO Standards for Land Administration and Property Tax Systems."

During the conference, President Ripperger, CAE, and Executive Director Ron Worth, CAE, met with representatives from numerous international organizations, such as the U.S. Agency for International Development and World Bank project participants, as they strive to expand IAAO's presence world-wide. IAAO will continue to cultivate its partnership with the World Bank to advance our common mission and the goals of promoting good governance and achieving sound tax policy reform.

Margie Cusack is Research Manager at IAAO. She has 30 years of experience in management, property tax administration, GIS system development, and valuation in Cook County, Illinois. She has master's degrees in public policy and political science from the University of Chicago. She has served on the IAAO Executive Board and numerous IAAO committees.

(l to r) Richard Almy, Kauko Jussi Viitanen, Ruud M. Kathmann, and Paul Bidanset preparing presentation segments for the session, "Approaches to Implementing Property Tax Reform."

Welcome to Las Vegas

Carol Burgeson

The city of Las Vegas needs no introduction, and September will be a fabulous time to visit the West. The city is known not only for the famous Las Vegas Strip with five-star resorts, world-class dining, spectacular entertainment, and fabulous shopping but also for what lies beyond the glistening lights. These days Las Vegas cannot be accused of being a one-trip gambling destination.

Shows

The resorts offer events nearly every night, the shows are as well-known as the city itself, and they definitely do not disappoint. There are live animal exhibits for animal enthusiasts, roller coasters for thrill seekers, comedy acts, headliner concerts, theatrical performances, and symphonies—no matter when you visit, there's a show to see.

Some of the headliners for September are Santana, Jennifer Lopez, Ricky Martin, and Depeche Mode. Head to town before the conference to experience the Life is Beautiful Festival in downtown Las Vegas September 22–24, 2017.

Beyond the Strip

The Strip will undoubtedly keep you entertained for days and days, but there's a wide range of recreational activities to be enjoyed just minutes away from the famous stretch of road. Red Rock National Conservation Area offers hiking, biking, and rock climbing. Mt. Charleston offers cooler temperatures and is Nevada's fifth tallest peak. Enjoy lunch or dinner at The Resort on Mt. Charleston.

If you are interested in the history of Clark County, where Las Vegas is located, a short ride to the Springs Preserve would be for you. Situated on 180 acres, it is the premier place to explore the valley's vibrant history. For more information, check out the website https://www.springspreserve.org.

Stretching farther out from the city limits is the famous Hoover Dam located in Boulder City. Extending 726 feet from foundation rock to the roadway on the crest of the dam, this is still a must-see for first-timers to Nevada. The Bureau of Reclamation offers various tours of this historic icon in the desert; for more information, visit https://www.usbr.gov/lc/hooverdam.

Extending your stay out West will give you an opportunity to visit one of the many National Parks located within a few hours from Las Vegas. Zion National Park in Utah, Grand Canyon National Park in Arizona, and Joshua Tree National Park in California all offer a wide variety of sightseeing, hiking, and exploring nature.

For Foodies

Of course, it wouldn't be Las Vegas if we didn't mention the gastro experience. From the 24-hour coffee shops offering prime rib specials to celebrity-chef restaurants serving their finest dishes, Las Vegas is the food lover's dream. Some of these famous restaurants are walking distance from Bally's, the conference hotel. Indulge your palate at Gordon Ramsay Burger, Guy Fieri's Vegas Kitchen & Bar, Julian Serrano Tapas, or GIADA during your stay in Las Vegas.

The Clark County Assessor's Office is excited to show off the city and looks forward to hosting the 83rd Annual International Conference on Assessment Administration and Exhibition September 24–27, 2017. Elvis said it best, "Viva Las Vegas!"

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Accuracy and Consistency Essential for Proper Verification of Sales

Ryan DeLeon, RES, AAS

In the creation of multiple regression models, accurate data content or the ability to make data accurate is extremely important. If the collected data content is consistently and methodically incorrect, the problems can sometimes be fixed through adjustments. If there have been multiple approaches to data collection, the process becomes more difficult. Accuracy of data content is extremely important for sales verification because that content is the basis for the model. The unsold properties can always be adjusted after the sales have been analyzed.

One key to the sales verification process is consistency in invalidating sales, evaluating property condition, identifying properties that have been remodeled, recognizing changes made after a sale, and determining when to flag properties for further investigation. Also, training field data collectors on how to find relevant information is helpful. For example, data on whether a basement has been remodeled are often missed, and this can skew the ratios. A well-maintained data collection manual is a useful tool for ensuring that data are as consistent and accurate as possible (IAAO 2013).

When to Invalidate Sales

Consistency is important when considering which sales are valid arm's-length transactions and which are not. Obviously there are specific rules for the jurisdiction, but when individual judgment is allowed, it should be consistent. A good rule is to automatically flag high and low ratios for further review. Issues vary depending on the market. Appraisers should know when a sale is invalid and consistently label them as such. A list of sales generally considered invalid can be found in Section 5.3 of the *Standard on Verification and Adjustment of Sales* (IAAO 2010).

Property Condition and Remodeled Properties

Appraisers should be consistent in their evaluation of property condition and remodeled properties. When should they upgrade or downgrade the condition of a property? Is it *good* or *very good*? Should they adjust for effective age or simply list the year built? What extent of a remodel warrants a change in value? What if the kitchen is remodeled, but nothing else? Is a remodel part of general upkeep to maintain existing value, or is it a value-added enhancement? A standardized guide can help answer these questions in a consistent manner. A guide may not include every situation, but at least it will help maintain consistency.

Changes after a Sale

Depending on the CAMA system, a change may prompt a determination of whether to update the sales inventory. Anyone who is entering data needs to know the appropriate procedure when a record is updated after it has been sold. If changes made after sale are not identified and recorded, the ratios can become dramatically skewed. Changes made after a sale are common—in newer homes, particularly in regard to basement finish, and in older homes in regard to remodels, additions, or detached garages. According to Section 5.10 of the *Standard on Verification and Adjustment of Sales* (IAAO 2010), sales with property characteristic changes after the sale can still be valid for mass appraisal purposes, provided the characteristics at the time of sale can be matched to the sale price.

Flag for Further Investigation

Further investigation may be required before a sale can be included in the model. If a sale doesn't seem to make sense but there is no specific reason to invalidate it, further investigation is warranted. An experienced appraiser can investigate the details and, based on his or her knowledge, may be able to identify issues based on the location of the sale or other unique factors. Sometimes extraordinary assumptions may need to be made in these situations.

Where To Get Information

Using a local multiple listing service (MLS) in conjunction with an on-site inspection is an effective means of gaining information about the interior of a home, especially if an owner has denied access to the interior of a property. If the

appraiser does not have access to an MLS property, there are still viable options for evaluating the validity of the sale.

Luckily the internet tends to retain data for long periods of time, including old real estate listings. An easy approach is to simply Google the address of a sale. This approach may find two or three websites in the area that tend to have better comparables than the others. Sometimes it is a local site, and sometimes it is a national site. A few examples are Zillow (Zillow.com), Movoto (moveto.com), Redfin (redfin.com), and Berkshire Hathaway Home Services (berkshirehathawayhs.com). Membership is sometimes required but is typically free.

The appraiser cannot automatically assume the data content is accurate. Sometimes the total square footage includes the unfinished basement; it depends on the agent who created the listing. Read the description and look at the pictures. If a basement is finished, it's almost certain to be mentioned and/or photographed. When used in conjunction with an on-site inspection, the information found online can be most beneficial. See Section 3 of the *Standard on Verification and Adjustment of Sales* (IAAO 2010) for other sources of sales data.

The information in this article doesn't apply only to model-driven values. Regardless of how properties are valued, these tips will help create better and more accurate values. However, accuracy is even more important for models. It is much more difficult to try and go back and fix the sales data when the model is being built and calibrated. If everyone is on the same page, there is confidence that whatever is listed as a valid sale can be used in the model. Be sure to document the office policies and make them available for easy reference. Rather than have people go to a huge data collection manual, condense some of the most important consistency issues into a smaller document that answers a majority of the day-to-day questions.

References

IAAO. 2010. *Standard on Verification and Adjustment of Sales*. Kansas City, MO: IAAO.

IAAO. 2013. *Standard on Mass Appraisal of Real Property*. Kansas City, MO: IAAO.

Ryan DeLeon, RES, AAS, is the Compliance Analyst for Adams County Government in Colorado. He is owner of DeLeon Consulting Solutions, LLC.

Calendar of Events

Local • Regional • International

Northeastern Regional Association of Assessing Officers
2017 NRAAO Conference
May 21–24, 2017
Mystic, Connecticut, United States
http://www.nraao.org/about/future-conference-locations/

Appraisal Institute Canada and Appraisal Institute
2017 International Valuation Conference
June 8–11, 2017
Ottawa, Ontario, Canada
http://www.appraisalinstitute.org/annual-conference/

North Central Regional Association of Assessing Officers
2017 NCRAAO Conference
June 19–22, 2017
Wichita, Kansas, United States
http://www.ncraao.org/2017ConfLocation.htm

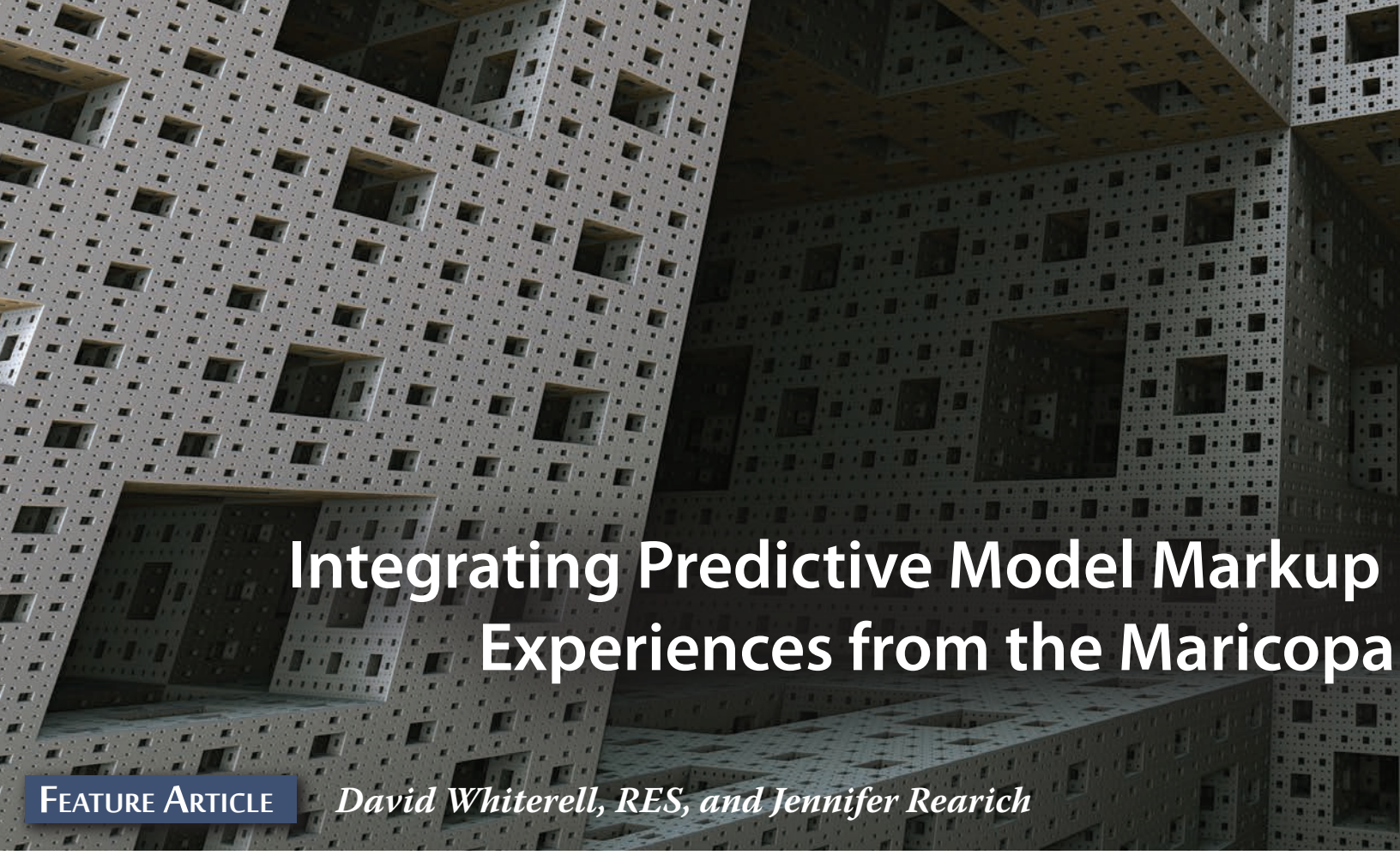
National Association of Counties
2017 NACo Annual Conference
REGISTRATION IS OPEN NOW
July 21–24, 2017
Franklin County, Ohio, United States
http://www.naco.org/events/nacos-82nd-annual-conference-exposition

Michigan Assessors Association
2017 Annual Summer Conference
July 30–August 2, 2017
Kalamazoo, Michigan, United States
http://www.maa-usa.org/About-Us/News-Article-Display-Copy/maa-2017-annual-summer-conference

Minnesota Association of Assessing Officers
2017 MAAO Fall Conference
September 10–13, 2017
Duluth, Minnesota, United States
http://www.mnmaao.org/index.php?option=com_mc&view=mc&mcid=9

Northeastern Regional Association of Assessing Officers
2018 NRAAO Conference
April 29 to May 3, 2018
Quincy, Massachusetts, United States
http://www.nraao.org/about/future-conference-locations/

Submit event information with name, date, place, and contact information to bennett@iaao.org.



Integrating Predictive Model Markup Experiences from the Maricopa

FEATURE ARTICLE

David Whiterell, RES, and Jennifer Rearich

Editor's Note: This paper was written in conjunction with a presentation given at the 21st Annual GIS/CAMA Technologies Conference, March 6–9, 2017, Chattanooga, Tennessee.

In its most fundamental form, valuing properties for a property tax roll has remained largely unchanged. However, the methodology of determining values and completing the processes necessary for assessment purposes has evolved as jurisdictions have grown, technology has developed, and governments have sought more efficient and effective practices.

In recent decades, mass appraisal modeling, particularly regression modeling, has become an increasingly favored methodology for valuing large quantities of properties accurately and quickly by analyzing vast amounts of sale, income, and property data. Despite this efficient process for creating values, the challenge of how to easily place these complex valuation models into a computer-assisted mass appraisal (CAMA) system for appraiser interaction was, until recently, one of the final puzzle pieces.

In 2013, the Maricopa County (Phoenix, Arizona) Assessor's Office embarked on a massive project to replace its legacy CAMA system with technology appropriate for an efficient and effective modern ad valorem mass appraisal office. This article describes how the office sought to transform its mass appraisal modeling processes by utilizing model deployment to place a valuation model in a new CAMA system for instant revaluation. After explaining existing assessment processes, this article elaborates on the research and development that ultimately led to the selection of Predictive Model Markup Language (PMML) as a model deployment solution.

Also discussed are the challenges of developing a PMML-based solution as well as how this addition to a future CAMA system has positively changed processes and opened doors for new opportunities, specifically alternative aspects of data analysis and model usage. Ultimately, this article seeks to expose how the singular transformative idea of model deployment can greatly improve the connection between mass appraisal modeling and CAMA systems for the betterment of the mass appraisal industry.

The Starting Line

In many ways, the catalyst for innovation in the Maricopa County Assessor's Office has been population growth. In 2015, Maricopa County was home to 4.1 million people across 9,200 square miles of land (U.S. Census Bureau 2015). In addition to the city of Phoenix, Arizona's state capital, Maricopa County contains 23 municipalities and five Native American communities. Altogether, the Maricopa County Assessor's Office is responsible for managing an annual

Language into a CAMA System: County Assessor's Office

assessment roll of 1.58 million parcels valued at nearly $450 billion (full cash value in 2016). In addition to the creation of the annual assessment roll of all properties in the county, Arizona's statutorily defined assessment calendar mandates a secondary assessment roll to account for any new construction or substantial changes since the completion of the primary assessment roll for a given tax year.

To accomplish the behemoth task of producing valuations for a massive jurisdiction, the office employs 260 staff members of whom slightly more than half are appraisers and eight are modelers. Maricopa County established a comprehensive mass appraisal modeling program in the mid-1990s as explosive growth demanded new processes for producing fair and equitable annual property valuations with efficiency. Since its establishment, the mass appraisal modeling program has grown to become an integral part of the county's assessment practices, developing models with Statistical Package for the Social Sciences (SPSS). In 2016, the modeling group produced 71 annual multiple regression analysis (MRA) models covering a variety of property types.

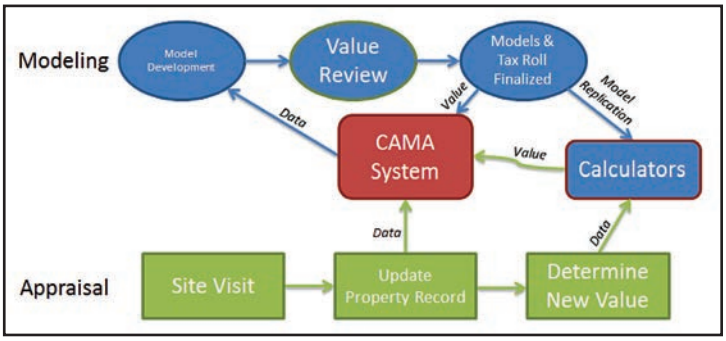
Existing Valuation Processes

Model-building processes largely adhere to IAAO standards and courses. Currently, the modeling group utilizes 27 residential and six commercial market areas to divide the county into more manageable models by property type (residential, condominium, residential land, commercial land, apartment income, industrial market, office income, and office market).

Early in the development of a modeling program, it was recognized that mass appraisal models cannot exist independently of appraisal practices within the assessor's office. This acknowledgment led to the development of two key interactions between the modeling and appraisal processes (see figure 1).

First, appraisers are included in a value review process just before the models and tax roll are finalized. In general, parcels with atypical changes in value or parcels with substantial parcel record changes are reviewed for quality assurance and

Figure 1. Existing processes with the CAMA system in the Maricopa County Assessor's Office



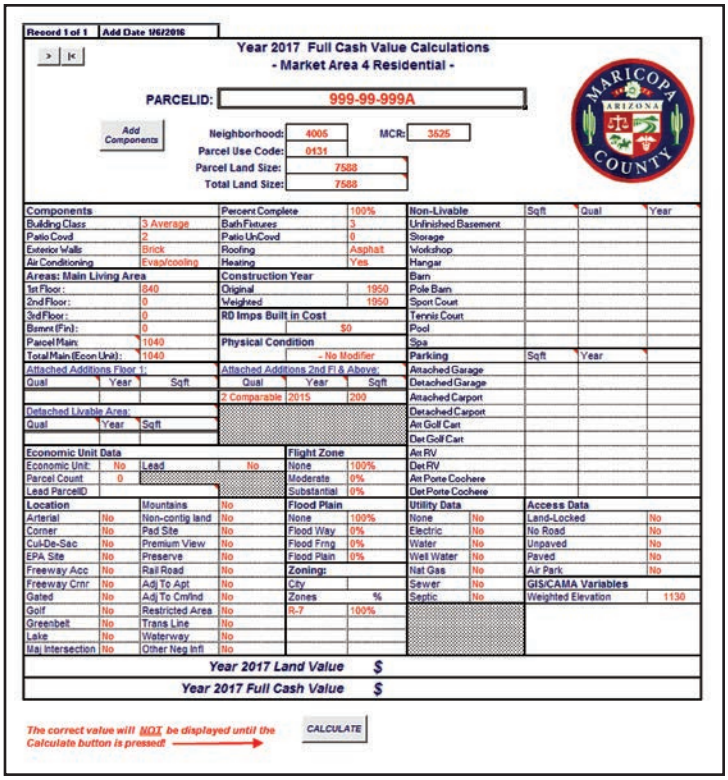
defendable values. This process generates valuable feedback from appraisers who are more familiar with their geographical areas because of regular fieldwork while allowing modelers to make final model adjustments.

The second key interaction occurs after the tax roll is finalized. The current CAMA system does not have the ability to calculate model values, so modelers upload a file of values for each tax roll. However, there are numerous instances that require an appraiser to update values after this initial upload. To bridge this gap, the modeling group developed a process that replicates models in a *calculator* built using Microsoft Excel (figure 2). These calculators allow appraisers to interact with models and to update property values when property record changes occur. Overall, this process has successfully bridged key gaps between modeling and appraisal tasks; however, there are positives and negatives on both sides.

From a modeling perspective, this process does not restrict modelers to fitting models into an outcome process (i.e., calculators are created in Excel, which can be adjusted for nearly any scenario of SPSS code). Furthermore, the creation of calculators serves as a review process for modelers; in replicating a model inside a calculator, modelers are forced to reconcile any mistakes that might be found.

This review can also have a negative effect because sometimes these mistakes require the assessor's office to generate revised valuation notices. In addition, building calculators is time-consuming. An efficient modeler can create a calculator in a day or two if the model is relatively simple, whereas larger, more complex models can require several days for replication and thorough testing.

Figure 2. Example of calculator built by Maricopa County Assessor's Office



Occasionally, despite meticulous efforts to ensure accurate model replication and to conduct thorough testing during production, appraisers find translation errors, sometimes within the same year the calculator is produced, other times several years later. When an error is identified, a modeler must spend time to diagnose and resolve the issue.

From an appraisal perspective, this process allows appraiser control of valuation for atypical property types or conditions (external influences, unique characteristics, condition, structure type, or configuration). In addition, calculators allow appraisers to conduct "what if" scenarios as part of their analysis to produce alternative values in an appeal or override process. However, these calculators exist entirely independent of the CAMA system, and therefore appraisers must manually enter authoritative values produced in calculators into the CAMA system itself. This secondary authoritative source not only increases the possibility for errors but also adds extra time to the process and limits quality assurance checking.

The Goal

Although existing systems utilized by the Maricopa County Assessor's Office are sufficient to operate an assessment office, the core CAMA system has become dated and is slated for replacement. In conceiving a new CAMA system, the office envisioned integrating MRA models for direct use by appraisers, thereby allowing instant revaluation based on an assigned model and ultimately creating more efficient work flow.

In data science, the application of an existing model to new data is known as model deployment. This aspect of model building is currently not well developed in the mass appraisal industry. In fact, the IAAO *Standard on Automated Valuation Models (AVM)* mentions model deployment twice:

- *An AVM must be tested to ensure that it meets required accuracy standards before being deployed* (IAAO 2003, 7).
- *The process of developing and deploying an automated valuation model must include safeguards to insure [sic] the accuracy of data used and the integrity of results produced* (IAAO 2003, 24).

Over the years, the discussion about mass appraisal modeling has focused largely on building better models. However, a disconnect between model development and model deployment remains. When these aspects of modeling have been connected, entire assessment offices value property within a CAMA system efficiently, flexibly, and uniformly by using models built and implemented in the system by modelers.

PMML and Model Deployment

Model deployment is a growing activity in many industries that utilize large amounts of data and build predictive models. While the list of tools available for *developing* predictive models (from data mining and cleaning to creation of an actual model statement) is continually expanding, tools for *deploying* models are nonexistent, are restricted to tools provided by closed-source programs, or require a programmer to write custom code to rewrite the model in a deployable format readable by a specific system. It is in this disconnect that PMML was conceived as a solution allowing the same team that builds models to deploy them (Guazzelli, Stathatos, and Zeller 2009; Guazzelli et al. 2009).

Utilizing PMML as a method to deploy regression models is a new concept in the mass appraisal industry. Determining how to convert a valuation model into a format consumable by a CAMA system for deploying model values—a lofty ambition—required thorough research and experimentation.

PMML, managed by a consortium known as the Data Mining Group (DMG), is a markup language used by many industries for sharing analytic models among PMML-compliant platforms. PMML represents models in an XML-based language and is the open standard for representing and sharing predictive models among different applications. Since its original development as Version 0.7 in 1997, the PMML standard has been enhanced by a number of vendors and organizations to apply the markup language to many predictive model types, including regression, decision trees, cluster models, and neural networks. PMML places predictive models written in a statistical program such as SPSS into a predefined format utilizing components common to different modeling types. This standardized format enables model portability, in which a model can be written in one program but easily opened or read by another PMML-compliant program on any operating system.

Over the years, numerous organizations in industries such as insurance, finance, market research, and health services have integrated PMML as a means of model deployment and further developed the PMML standard. For a number of years, the Maricopa County Assessor's Office has watched the PMML standard develop. However, it wasn't until Version 4.2 was released in February 2014 that the standard was suitable for the types of transformations needed to build regression models for property valuation. Utilizing PMML as a method to deploy regression models is a new concept in the mass appraisal industry. Determining how to convert a valuation model into a format consumable by a CAMA system for deploying model values—a lofty ambition—required thorough research and experimentation.

From Concept to Actuality

With a request for proposal (RFP) on the table and a vendor selected, the assessor's office modeling group began to fully define a long-standing idea: the integration of SPSS-developed models into a CAMA system for on-the-fly property value calculations. While other mass appraisal jurisdictions may have developed specific processes for model deployment, the office could not identify any documented method, procedure, or product that provided the desired solution for deploying complex models. There apparently was no commercially available CAMA system that offered the functionality sought in the RFP.

Making a Decision

Research considered a range of methodologies adopted in various industries utilizing predictive models. Ultimately, the focus was on three options most likely to achieve the desired goal of calculating model values within a CAMA system: Iron Python (a version of the Python programming language that is tightly integrated with the .NET framework), PMML (an XML-based model deployment standard), and a custom vendor-built program. For these three promising methods, the following questions were considered:

- Could the option successfully calculate within a CAMA system?
- What impact would the option have on existing modeling processes?
- How much time would it take annually to convert 70+ models from SPSS syntax to PMML? Could conversion be automated?
- How quickly could values be calculated—both batch (anticipating upwards of 2 million parcels in the near future) and single?
- Was the option flexible in form and language (i.e., adaptive to nonregression model types or other statistical programs)?
- Did the option present any potential database security issues?

After the positive and negative aspects of each option had been considered, PMML was selected as the preferred method of implementation. Research indicated PMML was suitable for a number of predictive model types beyond

regression, in addition to being compatible with numerous statistical programs. PMML is portable, and the earliest speed tests indicated 250,000 values could be calculated on an old computer in less than two minutes; speeds have since proven much faster on a server.

SPSS and PMML

Since the Maricopa County Assessor's Office modeling group was established, SPSS has been the dominant statistical program for developing mass appraisal valuation models. SPSS provides PMML-generating tools; however, the SPSS facilities for PMML present some challenges. While SPSS syntax is a statistical programming language, it has some nuances that are challenged by other programming languages, in particular, PMML.

Existing solutions from SPSS and R each presented problems. With only seven modelers and one supervisor to complete more than 70 models annually, spending time manually coding or updating PMML for each model did not fit into existing timelines.

The most critical of these nuances pertains to overwriting original variables: SPSS allows modelers to redefine the same variable an unlimited number of times throughout the syntax. For example, in the first instance a square foot variable may exist in an original data table to encompass all the livable area in a house, but further down the syntax a modeler might overwrite the same square foot variable to remove the finished basement, such as *SQFT = SQFT – FINISHED_BASEMENT*. SPSS syntax allows for this flexibility, but programmatically PMML does not. In this instance, the group became better modelers by rewriting SPSS syntax to avoid overwriting original *raw* variables from the incoming data table. Instead of overwriting SQFT, as in the example above, modelers now create a new variable such as *SQFTM = SQFT– FINISHED_BASEMENT*.

As experimentation continued with the SPSS-to-PMML conversion process, the modeling group discovered that its version of SPSS (Version 22) provides PMML-generating tools for PMML Standard Version 4.1. As mentioned previously, it wasn't until PMML Version 4.2 that the standard became friendly enough to easily accommodate transformation types commonly utilized in the office's regression models. While this lack of transformation capability could have been resolved by adjusting modeling processes to accommodate the restrictions of an older PMML standard, it would have required significant time and effort. Overall, the amount of work required for modelers to utilize existing SPSS-to-PMML conversion tools limited the attraction of maintaining the SPSS-based modeling program.

Evaluating R

With the challenges of SPSS's PMML conversion tools in mind, the modeling group considered switching to R, an open-source language and environment for statistical computing, to complete the modeling process utilizing R's PMML conversion packages. R is free, is constantly improving, is increasingly common in higher education, and supports PMML, but changing existing modeling processes from SPSS to R presented some issues.

First, switching to R would require maintaining years of previous SPSS models. While the group doesn't regularly deal with legacy models, occasionally certain scenarios require using SPSS to determine a value from an older tax year. Furthermore, utilizing R would require modelers to do some manual manipulation to PMML, unless a custom R package could be developed to support the transformations and customizations required.

Second, from an administrative standpoint, R is a far more code-intensive statistical package than SPSS and would require a significant amount of modeler training. R requires conciseness because it operates like a programming language, while SPSS syntax is more flexible and forgiving. Over the years, the modeling program has established that appraisers can concurrently learn mass appraisal modeling concepts while learning SPSS and producing credible valuation models. Switching to R would drastically delay this dynamic if an appraiser had no prior experience with R or other programming languages. The near term is not the appropriate time to switch to R, but R may be a better choice for future modeling needs.

Methodology Decisions

Existing solutions from SPSS and R each presented problems. With only seven modelers and one supervisor to complete more than 70 models annually, spending time manually coding or updating PMML for each model did not fit into existing timelines. Increasing staff size was unlikely, as was adjusting a modeling process built around a statutorily defined calendar. Logistically, the modeling group needed to build PMML in parallel with its modeling activities.

While the group was considering the next step to bridge the gap between model development and PMML-based model deployment, criteria were established to guide the future solution. First, the solution should be long term, stable, and easy to use. Second, modelers should remain modelers, and

minimal time should be devoted to writing code beyond the statistical models themselves or learning additional programming languages for the sake of model deployment.

To ensure long-term stability, strictly following PMML standards and schema was essential. The solution had to be functional not only in the immediate future but also 10 or more years down the road. By adhering to the well-documented PMML standard, the group was confident that the solution would work long term with any statistical package or supported model type.

Considering these criteria and the ultimate goal of model deployment within a CAMA system, the group decided to build a custom PMML code generator around existing modeling processes. A custom solution eliminates teaching modelers how to manually manipulate PMML code, reduces errors with PMML code, and allows modelers to focus on what they do best—modeling.

Embarking on this process required a high-level understanding of the database schema, supported model types, and the mathematics behind each type of model transformation, and allowances had to be made for eight slightly different model coding styles in the modeling group. Recognizing the need to ensure accuracy of PMML, tests were developed to ensure that PMML-calculated values matched SPSS-modeled values.

Learning the Fundamentals

With limited PMML resources at its disposal, the modeling group opted to have two modelers with other programming experience take an online course through the University of California at San Diego Extension Program (http://extension.ucsd.edu/studyarea/index.cfm?vAction=singleCourse&vCourse=CSE-41184). Once the course "Predictive Models with PMML" was competed, two major conclusions were reached: modelers are not computer programmers and achieving the goal with PMML was going to be difficult. Hence, the group pursued some basic programming training so all modelers would understand and be comfortable with PMML.

The University of Michigan offers a series of online Python courses through Coursera, a platform for massive open online courses (https://www.coursera.org/specializations/python). On an individual basis, modelers completed online lecture videos, quizzes, and assignments, but collectively collaborated and shared ideas to help each other complete the course.

The group then applied their new Python skills to a more familiar scenario: a weighted age calculation. Initially, the Python code completed very simple calculations, but as classes became more complex, this knowledge was applied to more sophisticated weighted age calculators with error warnings to account for illogical situations. Utilizing a methodology of applying new skills to something familiar strengthened each modeler's understanding of Python and programming languages while alleviating concerns about the group's collective ability to handle PMML. Completing courses on Python did not transform the group from modelers to programmers; however, it did establish the foundational programming skills necessary to read code and troubleshoot errors, aspects vital for success in a PMML-based mass appraisal modeling environment.

Transforming Processes

Implementing PMML required a comprehensive review of existing work processes, from data extraction to model development and deployment. Upgrading existing data extraction processes for PMML meant establishing which variables are contained in the CAMA system, how those variables are stored, and how to extract data in a format usable for modeling.

Splitting what had been one process into three processes (data extraction, model development, and model deployment) has opened new doors—some intentionally and others discovered along the way.

Historically, the modeling group has been responsible for creating its own data extracts from the existing CAMA system, so this enabled the group to work collaboratively with the vendor to establish future data extraction processes suitable for PMML integration. During this collaboration, it was discovered that in order to fully realize PMML's deployment capabilities, the extract process needed to be integrated with the CAMA system rather than being an external process completely independent of the system. This is not only a substantial dynamic change but also an improvement upon existing processes within the modeling group.

Model development did not change except to accommodate PMML's requirement to maintain the integrity of original data, as described previously, as well as not redefining model-created variables multiple times. Ideally, good modeling conventions encourage the use of different names for each variable created within a model. However, because the SPSS syntax is forgiving and oftentimes hundreds or thousands of lines long, modelers occasionally overwrite an existing variable or add the same variable twice to the final prediction statement.

Sometimes revised value notices must be sent because these errors are not caught until calculators are built, a process that occurs after the tax roll is complete. Because PMML does not allow these scenarios and the conversion process identifies problematic code, modelers have been forced to adapt better coding techniques to ensure model integrity can be carried into the deployment phase with PMML.

Splitting what had been one process into three processes (data extraction, model development, and model deployment) has opened new doors—some intentionally and others discovered along the way. Overall, implementing PMML has improved work flow processes and modeling habits. Because the development and transition to a new CAMA system is a lengthy process, the group opted to redevelop calculators to utilize PMML code rather than hand-coding each model in Microsoft Excel. While the calculators will be retired when the new CAMA system is in live production, this interim reworking to integrate PMML will save six to eight weeks of development time and enable modelers to spend more time on critical aspects of modeling.

Furthermore, utilizing PMML in calculators will shorten the amount of time needed to update them for the secondary tax roll, a process that normally takes two weeks. Because PMML is generated as models are completed, calculators can now be available when models are complete, thus giving appraisers more tools to utilize during the value review process, something not previously possible. As models are finalized, any model changes in SPSS can be easily updated in PMML for calculator use. Modelers immediately benefit from the additional time available, and appraisers gain access to calculators much sooner.

Sowing Teamwork for Innovation

> *Innovation has nothing to do with how many R&D dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R&D. It's not about money. It's about the people you have, how you're led, and how much you get it.*
>
> —Steve Jobs (Maroney 1998)

Successfully pioneering a new methodology in a well-established modeling process is no easy task. While the modeling group is small, its collective talent is extensive; each modeler brings a unique set of talents, skills, and experiences to the table. As a team, the modelers bought into a big idea and creative solution to fundamentally change the future of the CAMA system and to drastically improve processes. Despite the excitement of pursuing PMML, routine tasks still needed to be completed, including production of the annual tax roll.

Each modeler bought into the PMML game plan: one modeler was reassigned to focus solely on the PMML development; a few modelers continued modeling while contributing smaller pieces to the PMML project and CAMA system transition; and the remaining modelers assumed additional modeling responsibilities from those focused on ensuring a successful transition to a PMML-based CAMA system.

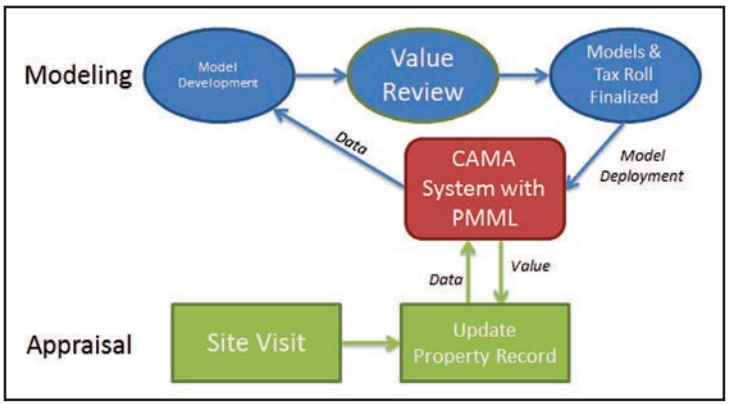
Along the way, the project encountered challenges, issues, and concerns relating to change, but as in most other projects, these were expected. The modeling group has always been receptive to change, but most of the changes instituted in the past did not profoundly alter the overall modeling process. Change management became a key discussion topic with each challenge encountered along the way. With no examples of a roadmap to success, the group had to determine how to advance from point A to point B. At times, challenges appeared insurmountable, and possible solutions appeared detrimental to the overarching goals for using PMML.

Embarking on a new, revolutionary way of doing things oftentimes presented more questions than answers, and failure was always possible, but collectively, the group believed in one galvanizing idea: if models could be deployed within a CAMA system, the entire assessment office would reap the benefits. Eventually, all the pieces successfully came together to close the gap between model creation and the CAMA system. Despite the discovery of numerous unsuccessful methods along the journey, the eventual solution not only achieved a very beneficial program but also opened a realm of possibilities not previously considered.

Envisioning the Future

Although the new CAMA system for the Maricopa County Assessor's Office has not yet been completed, the modeling group has created the tools necessary to make PMML-based model deployment successful. Future work flows have not been finalized, but much cleaner processes that eliminate repetitive steps are envisioned (figure 3). For modelers, this means eliminating the development of calculators because

Figure 3. Processes envisioned for CAMA system with PMML in the Maricopa County Assessor's Office



the CAMA system itself will be a calculator with PMML as the catalyst.

Appraisers will continue to update property records within the CAMA system, but the values will automatically recalculate, eliminating the need to utilize the existing calculators outside of the CAMA system and minimizing the possibility for errors in transcribing parcel records and associated values. Ultimately, this new, integrated approach to a CAMA system promises more succinct processes while making the inner workings of mass appraisal models more transparent.

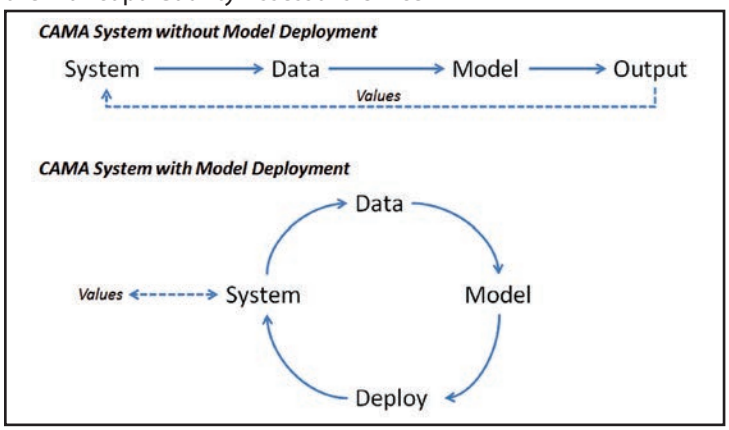
Transforming processes represents a significant shift in the importance of a CAMA system (figure 4). Because of the challenges of model complexity, CAMA systems have historically been fed a list of model values based on a given regression model and parcel records captured at a single moment. Now, using PMML as a means of model deployment, a CAMA system will contain the necessary data transformations and final model prediction statements needed to produce values. Consequently, this shift elevates the importance of the model itself, moving from an environment in which modelers produce model values to one in which modelers produce models that provide model values.

PMML supports a number of predictive modeling types from regression to clustering, decision trees, k-nearest neighbors, and neural networks. Although this project was largely about using PMML for deploying regression-based mass appraisal models in a CAMA system, the modeling group has realized that predictive models can be used for any number of processes, existing or new, to improve a CAMA system and to assist staff in completing various and oftentimes repetitive tasks.

Comparable Sales

The existing suite of office tools includes a comparable sales program built by the modeling group to help appraisers find comparable sales while utilizing a nearest neighbor calculation to return similar properties (Whiterell 2011). In addition, the assessor's office website contains a generic comparable sales selection program that is available to the public. However, the website does not provide the same informed methodology for selecting sales, oftentimes creating confusion. Because PMML is portable, it would be possible to build a comparable sales selection model to be used as a service internally as well as on the website. This not only would assist taxpayers with general questions about property values, but also could be linked with the current online appeals submission process. There are numerous uses for a comparable sales selection model; creating such a model using PMML allows for easy, uniform deployment wherever it might be needed.

Figure 4. CAMA system with and without model deployment in the Maricopa County Assessor's Office



Data Collection

Data collection is an integral component of assessment. Although much of the data commonly collected could be considered objective, some of it is subjective or better left to a uniform process such as a model. One example might be an effective age calculator: a model could be developed to establish effective age and even account for unique local features of a jurisdiction. Perhaps a coastal jurisdiction recognizes that properties along the ocean age faster than the rest of the community because of the elements. A modeler could analyze data, build an effective age model accounting for such a scenario, and easily deploy it within the CAMA system. Assessment offices collect vast amounts of data; PMML enables modelers to leverage these data and expand a CAMA system's capabilities by building new models to make more uniform data determinations.

Data Integrity

Annually, the Maricopa County Assessor's Office processes more than 100,000 deeds with sales affidavits. Ideally, all sales would be thoroughly reviewed to determine validity, but realistically the time and staff do not exist for such a massive task, thus forcing modelers to spend a great deal of time reviewing unusual sales during the modeling process.

With PMML, past sales could be analyzed to build a classification model to flag future suspicious sales for review and a process could be devised in the CAMA system to help staff make a final determination about each suspicious sale's status. Improving the sales verification process ensures greater integrity of sales data for modelers during the modeling process.

Decision Processes

Many common processes in assessment offices involve a series of decisions to route an item to the correct work group,

appraiser, or staff member; these processes could be modeled within a decision tree model. For example, appeals or permits could be routed within an assessment office utilizing a model accounting for location and property type, among other variables, to determine which appraiser would be best suited for the task. A modeler could construct a model to optimize an assessment office's resources and place the model in the CAMA system utilizing PMML. As appraisers and work groups change, the model could be adjusted and new PMML placed within the CAMA system would quickly reflect an updated office.

Conclusion

What started as a novel idea many years ago has developed into a pivotal transformation in the connection between mass appraisal models and CAMA systems while launching a new avenue for data analysis and model integration in the mass appraisal industry. Upon release of an RFP for a new CAMA system, the modeling group in the Maricopa County Assessor's Office, with the support of an ambitious and visionary administration, moved into uncharted territory and ultimately created a suitable methodology for creating mass appraisal models in PMML for use in a CAMA system.

Existing processes were discussed, indicating key interactions between modelers and appraisers while elaborating on challenges and areas for improvement. To ensure the most appropriate method of model deployment was selected, the modeling group considered time constraints, specifically its statutorily defined assessment calendar, while recognizing database security requirements, individual modeler workloads, and the overall scale of assessment roll production. In developing a custom PMML code generator specific to its modeling practices, the group worked through challenges and pursued changes in long-standing processes to make future processes practical, efficient, and effective. All modelers completed a series of Python courses to acquire a basic understanding of programming languages, thus providing foundational knowledge to work with and troubleshoot in a PMML-based modeling environment.

Pursuing change is a challenging endeavor, but the Maricopa County Assessor's Office will benefit immensely. In choosing PMML, the office has sought a minimally restrictive model deployment environment that gives modelers freedom in selecting coding styles, model analysis and production tools, and model types. Quick translation and testing tools remove prior model replication processes in Excel-based calculators while allowing flawless translations in a fast model deployment environment that satisfies existing time constraints.

In addition, speed improvements allow modelers to deploy models earlier, during both initial assessment roll production and secondary roll production, a process that normally conflicts with model completion for the next valuation year. With faster production, appraisers have quicker access to models and model values; this allows greater access during value review, something previously not possible. With the inner workings of a model within a CAMA system revealed, appraisers have a better context in which to establish model values. For both modelers and appraisers, these benefits free up time spent on repetitive processes and allow greater focus on more important tasks.

With collective recognition that integrating mass appraisal models within a CAMA system would benefit not only the modeling group itself but also the entire assessor's office, teamwork and collaboration became key ingredients—to successfully create the tools necessary for deploying models to the new CAMA system and to complete an entire assessment roll while allowing certain modelers to focus on PMML development. This challenging yet rewarding journey required comprehensively evaluating modeling processes to formally establish recognition of three major functions: data extraction, model development, and model deployment.

With PMML solving the long-standing puzzle of how to easily deploy a series of mass appraisal models within a CAMA system, new possibilities for data analysis and predictive modeling have been uncovered providing opportunities for jurisdictions of all sizes to capitalize resources for faster and more flexible processes. This work with PMML has enabled a deeper integration of valuation in appraisal processes, allowing modelers to shift focus from providing a set of values to providing model-determined adjustments, thereby enhancing a flexible and reusable process and removing repetitive analyses from assessment administration. We encourage others to consider how these discoveries might benefit their own jurisdictions and CAMA systems; the mass appraisal industry stands to gain enormous benefits from the introduction of PMML.

PMML Discussions

For those interested in learning more about PMML in the mass appraisal industry, there will be a presentation at the 83rd Annual International Conference on Assessment Administration, Las Vegas, Nevada, September 24–27, 2017. Recognizing that not all jurisdictions have the same constraints and requirements as Maricopa County, this presentation will seek to provide other assessment offices, both large and small, with a well-informed, outlined decision-making process in addition to a series of issues and questions for consideration in pursuing model deployment in a CAMA system.

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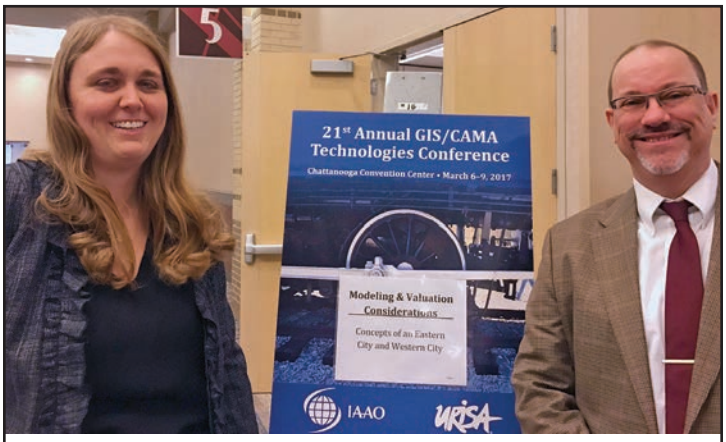

Jennifer Rearich joined the Maricopa County Assessor's Office in January 2012 where she spent one year as a Residential Appraiser before becoming a CAMA Regression Modeler. She holds a B.S. in urban planning from Arizona State University and an M.Phil in planning, growth, and regeneration from the University of Cambridge. In addition to mass appraisal modeling, she is also interested in GIS, housing and urban development issues, and trends in big data/data science.

David Whiterell, RES, is the CAMA Supervisor for the Maricopa County Assessor's Office CAMA Division. He has over 25 years of appraisal industry experience and a broad knowledge and comprehension of the principles, practices, and theories used in property appraisal and valuation, management, assessment office functions, and real estate principles. He earned his degree in public administration from Rio Salado College and has held the IAAO RES designation since 1996. In 2007, Mr. Whiterell was the first person to earn the Arizona Department of Revenue Certified Appraiser, Level III, which is Arizona's highest certification. He has also presented at multiple conferences on a variety of subjects relating to his work.

Correction Notice: In *Fair & Equitable* April 2017 there was an error on the front cover. The year listed was 2016 and it should have been 2017. IAAO regrets the error.

Know to Grow

For IAAO Chapters and Affiliates

IAAO Banners and Materials

IAAO display materials are available for meetings to promote IAAO programs and are available free to chapters and affiliates on a first-come, first-served basis. We recommend that you procure a table to display IAAO materials along with an IAAO banner. Please return the banner to IAAO via UPS ground; a return shipping document is included in the banner case for easy return.

Also available at no cost are IAAO brochures and promotional gifts for meeting guests. To reserve a banner or request materials, send a message to knowtogrow@iaao.org or call the membership department at 816-701-8105 six weeks prior to the meeting.

What's going on with your chapter or affiliate? Share by submitting ideas, updates, and pictures of what you're doing! Please send them to knowtogrow@iaao.org.

The Connecticut Chapter of IAAO held IAAO Course 400 Assessment Administration, instructed by Wayne Llewellyn, CAE (far left), in March in Rocky Hill, Connecticut. Students from Rhode Island and Massachusetts also attended. #shareiaao (photo by Stuart Topliff, IAAO Representative)

By Location

Alabama

400—Assessment Administration
Hoover, July 10–14, 2017

101—Fundamentals of Real Property Appraisal
Auburn, September 11–15, 2017

The Center for Governmental Services sponsor the offerings listed above. For more details, contact Leslie Hamby 334/844-4782 or register at www.auburn.edu/propertytax.

Arkansas

311—Residential Modeling Concepts
Little Rock, October 9–13, 2017

The Arkansas Chapter of IAAO sponsor the offerings listed above. For more details, contact Farrah Matthews 870/679-0693 or fmatthews@totalassessments.com

102—Income Approach to Valuation
Little Rock, July 24–28, 2017

300—Fundamentals of Mass Appraisal
Little Rock, August 28–September 1, 2017

The Assessment Coordinator Department sponsor the offerings listed above. For more details, contact Cleta Sample-Hardy 501/324-9104 or cleta.sample@acd.state.ar.us

Florida

101—Fundamentals of Real Property Appraisal
Tampa, May 22–26, 2017

300—Fundamentals of Mass Appraisal
Tampa, May 22–26, 2017

332—Modeling Concepts
Tampa, May 22–26, 2017

402—Tax Policy
Tampa, May 22–26, 2017

102—Income Approach to Valuation
Lake Mary, August 7–11, 2017

112—Income Approach to Valuation II
Lake Mary, August 7–11, 2017

333—Residential Modeling Applications
Lake Mary, August 7–11, 2017

601—Cadastral Mapping: Methods and Applications
Lake Mary, August 7–11, 2017

The Florida DOR sponsors the offering listed above. For more details, contact PTOTraining@floridarevenue.com

Illinois

155—Depreciation Analysis
East Peoria, August 9–10, 2017

The Illinois Property Assessment Institute sponsors the offering listed above. For more details, contact Keli Chambers 309-862-0300.

Indiana

400—Assessment Administration
Columbus, May 22–26, 2017

151—National USPAP
Indianapolis, June 6–8, 2017

300—Assessment Administration
Fort Wayne, June 12–16, 2017

101—Intro to Mass Appraisal
Indianapolis, June 26–30, 2017

300—Fundamentals of Mass Appraisal
Columbus, July 10–14, 2017

101—Fundamentals of Real Property Appraisal
Columbus, July 17–21, 2017

102—Income Approach to Valuation
Columbus, August 14–18, 2017

151—National USPAP
Indianapolis, August 28–30, 2017

400—Assessment Administration
Fort Wayne, September 11–15, 2017

311—Residential Modeling Concepts
Columbus, September 18–22, 2017

151—National USPAP
Fort Wayne, October 3–5, 2017

102—Income Approach to Valuation
Valparaiso, October 9–13

102—Income Approach to Valuation
Indianapolis, October 16–20, 2017

300—Fundamentals of Mass Appraisal
Indianapolis, October 30–November 3, 2017

151— National USPAP
Columbus, November 14–16, 2017

400—Assessment Administration
Indianapolis, December 4–8

The Indiana Chapter of IAAO sponsors the offerings listed above. For more details, contact Ginny Whipple 812/593-5308 or ginny@gnaassessmentprofessionals.com.

Kansas

201—Appraisal of Land
Manhattan, May 22–26, 2017

101—Fundamentals of Real Property Appraisal
Manhattan, July 10–14, 2017

400—Assessment Administration
Wichita, July 17–21, 2017

400—Assessment Administration
Topeka, August 21–28, 2017

102—Income Approach to Valuation
Topeka, August 28–September 1, 2017

311—Residential Modeling Concepts
Wichita, December 4–8, 2017

The Kansas County Appraisers Association sponsors the offering listed above. For more details, contact Cindy Brenner 620/873-7449 or kcaa@sbcglobal.net.

300—Fundamentals of Mass Appraisal
Wichita, July 31–August 4, 2017

312—Commercial/Industrial Modeling Concepts
Wichita, August 21–25, 2017

The South Central Kansas Regional Chapter of IAAO sponsors the offering listed above. For more details, contact Jack Manion or jack.manion@sedgwick.gov

101—Fundamentals of Real Property Appraisal
Olathe, June 5–9, 2017

402—Tax Policy
Kansas City, July 17–21, 2017

102—Income Approach to Valuation
Olathe, August 7–11, 2017

The Kansas City Chapter of IAAO sponsors the offering listed above. For more details, contact Michelle Clark 913/715-0058 or michelle.clark@jocogov.org.

Kentucky

102—Income Approach to Valuation
Frankfort, June 12–16, 2017

400—Assessment Administration
Frankfort, August 21–25, 2017

500—Assessment of Personal Property
Frankfort, September 11–15, 2017

The Kentucky Chapter of IAAO sponsor the offerings listed above. For more details, contact Robert Vick 502-564-7180 or Robert.Vick@ky.gov.

Louisiana

201—Appraisal of Land
Baton Rouge, May 15–19, 2017

400—Assessment Administration
Baton Rouge, May 15–19, 2017

600—Principles and Techniques of Cadastral Mapping
Baton Rouge, May 15–19, 2017

151—National USPAP
Baton Rouge, June 19–21, 2017

151—National USPAP
Baton Rouge, June 21–23, 2017

The Louisiana Assessors' Association sponsor the offerings listed above. For more details, contact Charlie Henington 318/226-6711 or assessor@caddoassessor.org. Web page www.louisianaassessors.org.

Minnesota

102—Income Approach to Valuation
Chanhassen, September 18–22, 2017

312—Commercial/Industrial Modeling Concepts
Chanhassen, November 6–10, 2017

The Minnesota Association of Assessing Officers (MAAO) sponsor the offering listed above. For more details, contact Jackie Coulter 320/761-0256 or educationcoordinator@mnmaao.org.

Missouri

600—Principles and Techniques of Cadastral Mapping
Mt. Vernon, July 10–14, 2017

The Missouri Mappers Association sponsor the offering listed above. For more details, contact Brenda Dryer 417/466-2831 or lcmoassessor@sofnet.com.

Nebraska

101—Fundamentals of Real Property Appraisal
Columbus, May 15–19, 2017

300—Fundamentals of Mass Appraisal
Kearney, August 7–11, 2017

332—Modeling Concepts
Lincoln, October 2–6, 2017

The Nebraska Department of Revenue sponsor the offerings listed above. For more details, contact Grace Willnerd 402/471-5982 or grace.willnerd@nebraska.gov or register at http://www.revenue.nebraska.gov/PAD/assessor/educ_cert.html.

Ohio

102 — Income Approach to Valuation
Columbus, May 22–26, 2017

400—Assessment Administration
North Canton, July 24–28, 2017

331—Mass Appraisal Practices and Procedures
Columbus, August 21–25, 2017

101—Fundamentals of Real Property Appraisal
North Canton, September 18–22, 2017

300—Fundamentals of Mass Appraisal
Colombus, November 13–17, 2017

The Ohio Ad Valorem School sponsor the offerings listed above. For more details, contact Melissa Graham-Perkins 330/232-1059 or Melissa.OhioAdValorem@hotmail.com.

Oklahoma

112—Income Approach to Valuation II
Tulsa, June 26–30, 2017

The Oklahoma Chapter of IAAO sponsor the offering listed above. For more details, contact Denise Bailey 405-257-3371.

South Carolina

300—Fundamentals of Mass Appraisal
Beaufort, July 10–14, 2017

The Beaufort County Assessor's Office sponsor the offering listed above. For more details, contact Gary James 843-255-2400 or gjames@bcgov.net.

Tennessee

600—Principles and Techniques of Cadastral Mapping
Mt. Juliet, June 26–30, 2017

312—Commercial/Industrial Modeling Concepts
Mt. Juliet, July 24–28, 2017

500—Assessment of Personal Property
Mt. Juliet, August 7–11, 2017

101—Fundamentals of Real Property Appraisal
Mt. Juliet, August 28–September 1, 2017

201—Appraisal of Land
Mt. Juliet, October 23–27, 2017

102—Income Approach to Valuation
Mt. Juliet, November 6–10, 2017

The State of TN, Comptroller of the Treasury sponsors the offering listed above. For more details, contact Cristi Moore 615/401-7774 or cristi.moore@cot.tn.gov.

Texas

331—Mass Appraisal Practices and Procedures
Austin, August 28–September 1, 2017

101—Fundamentals of Real Property Appraisal
Austin, October 9–13, 2017

151—National USPAP
Houston, October 16–17, 2017

102—Income Approach to Valuation
Austin, October 16–20, 2017

331—Mass Appraisal Practices and Procedures
Houston, October 23–27, 2017

332—Modeling Concepts
Austin, October 23–27, 2017

332—Modeling Concepts
Houston, October 30–November 3, 2017

112—Income Approach to Valuation II
Austin, November 13–17, 2017

201—Appraisal of Land
Austin, December 4–8, 2017

151—National USPAP
Austin, December 11–12, 2017

Texas Association of Appraisal Districts sponsor the offerings listed above. For more details, contact Doris Koch 512/467-0402.

102—Income Approach to Valuation
Waco, September 18–22, 2017

McLennan County Appraisal District sponsors the offering listed above. For more details, contact Joe Bobbitt 254/752-9864 or jbobbitt@mclennancad.org.

311—Residential Modeling Concepts
El Paso, October 2–6, 2017

400—Assessment Administration
El Paso, November 27–December 1, 2017

El Paso Central Appraisal District sponsors the offerings listed above. For more details, contact Dina Ornelas 254/752-9864 or diornel@epcad.org.

Vermont

101—Fundamentals of Real Property Appraisal
White River Junction, August 14–18, 2017

155—Depreciation Analysis
White River Junction, September 20–21, 2017

112—Income Approach to Valuation II
White River Junction, October 2–6, 2017

Vermont Association of Assessor and Listers (VALA) sponsor the offerings listed above. For more details, contact Michelle Wilson 802-377-7356, mwilson@hartford-vt.org.

Virginia

101—Fundamentals of Real Property Appraisal
Fredericksburg, June 12–16, 2017

102—Income Approach to Valuation
Fredericksburg, June 12–16, 2017

112—Income Approach to Valuation II
Fredericksburg, June 12–16, 2017

201—Appraisal of Land
Fredericksburg, June 12–16, 2017

300—Fundamentals of Mass Appraisal
Fredericksburg, June 12–16, 2017

311—Residential Modeling Concepts
Fredericksburg, June 12–16, 2017

312—Commercial/Industrial Modeling Concepts
Fredericksburg, June 12–16, 2017

331—Mass Appraisal Practices and Procedures
Fredericksburg, June 12–16, 2017

332—Modeling Concepts
Fredericksburg, June 12–16, 2017

333—Residential Modeling Applications
Fredericksburg, June 12–16, 2017

400—Assessment Administration
Fredericksburg, June 12–16, 2017

402—Tax Policy
Fredericksburg, June 12–16, 2017

601—Cadastral Mapping, Methods and Applications
Fredericksburg, June 12–16, 2017

The Virginia Department of Taxation sponsors the offering listed above. For more details, contact Terry Born 804/786-4091 or Theresa.born@tax.virginia.gov, or go to http://www.cvent.com/d/8vqc0g.

To sponsor IAAO classes contact Professional Development Operations Director Jean Spiegel, spiegel@iaao.org. Contact individual coordinators for each state's offerings for enrollment/registration information.

Wisconsin

931—Reading and Understanding Leases
Milwaukee, June 9, 2017

Scott G. Winter Training and Consulting sponsors the offering listed above. For more details, contact Scott Winter 414-233-3350, scottwinter626@gmail.com.

Wyoming

150—Mathematics for Assessors
Cheyenne, August 14–16, 2017

101—Fundamentals of Real Property Appraisal
Casper, August 28–September 1, 2017

332—Modeling Concepts
Cheyenne, September 11–15, 2017

601—Cadastral Mapping: Methods and Applications
Lander, October 2–6, 2017

The Wyoming Department of Revenue sponsors the offerings listed above. For more details, contact Alan Lemaster 307/777-3450, alan.lemaster@wyo.gov or Justin McNamara 307/777-5232, justin.mcnamara@wyo.gov.

BY COURSE

Course 101—Fundamentals of Real Property Appraisal
May 15–19, 2017, Nebraska (Columbus)
May 22–26, 2017, Florida (Tampa)
June 5–9, 2017, Kansas (Olathe)
June 12–16, 2017, Virginia (Fredericksburg)
June 26–30, 2017, Indiana (Indianapolis)
July 10–14, 2017, Kansas (Manhattan)
July 17–21, 2017, Indiana (Columbus)
August 14–18, 2017, Vermont (White River Junction)
August 28–September 1, 2017, Wyoming (Casper)
August 28–September 1, 2017, Tennessee (Mt. Juliet)
September 11–15, 2017, Alabama (Auburn)
September 18–22, 2017, Ohio (North Canton)
October 9–13, 2017, Texas (Austin)

Course 102—Income Approach to Valuation
May 22–26, 2017, Ohio (Columbus)
June 12–16, 2017, Virginia (Fredericksburg)
June 12–16, 2017, Kentucky (Frankfort)
July 24–28, 2017, Arkansas (Little Rock)
August 7–11, 2017, Florida (Lake Mary)
August 7–11, 2017, Kansas (Olathe)
August 14–18, 2017, Indiana (Columbus)
August 28–September 1, 2017, Kansas (Topeka)
September 18–22, 2017, Minnesota (Chanhassen)
September 18–22, 2017, Texas (Waco)
October 9–13, Indiana (Valparaiso)
October 16–20, 2017, Texas (Austin)
October 16–20, 2017, Indiana (Indianapolis)
November 6–10, 2017, Tennessee (Mt. Juliet)

Course 112—Income Approach to Valuation II
June 12–16, 2017, Virginia (Fredericksburg)
June 26–30, 2017, Oklahoma (Tulsa)
August 7–11, 2017, Florida (Lake Mary)
October 2–6, 2017, Vermont (White River Junction)
November 13–17, 2017, Texas (Austin)

Workshop 150—Mathematics for Assessors
August 14–16, 2017, Wyoming (Cheyenne)

Workshop 151—National USPAP
June 6–8, 2017, Indiana (Indianapolis)
June 19–21, 2017, Louisiana (Baton Rouge)
June 21–23, 2017, Louisiana (Baton Rouge)
August 28–30, 2017, Indiana (Indianapolis)
October 3–5, 2017, Indiana (Fort Wayne)
October 16–17, 2017, Texas (Houston)
November 14–16, 2017, Indiana (Columbus)
December 11–12, 2017, Texas (Austin)

Workshop 155—Depreciation Analysis
August 9–10, 2017, Illinois (East Peoria)
September 20–21, 2017, Vermont (White River Junction)

Course 201—Appraisal of Land
May 15–19, 2017, Lousiana (Baton Rouge)
May 22–26, 2017, Kansas (Manhattan)
June 12–16, 2017, Virginia (Fredericksburg)
October 23–27, 2017, Tennessee (Mt. Juliet)
December 4–8, 2017, Texas (Austin)

Course 300—Fundamentals of Mass Appraisal
May 22–26, 2017, Florida (Tampa)
June 12–16, 2017, Virginia (Fredericksburg)
June 12–16, 2017, Indiana (Fort Wayne)
July 10–14, 2017, Indiana (Columbus)
July 10–14, 2017, South Carolina (Beaufort)
July 31–August 4, 2017, Kansas (Wichita)
August 7–11, 2017, Nebraska (Kearney)
August 28–September 1, 2017, Arkansas (Little Rock)
October 30–November 3, 2017, Indiana (Indianapolis)
November 13–17, 2017, Ohio (Columbus)

Course 311—Residential Modeling Concepts
June 12–16, 2017, Virginia (Fredericksburg)
September 18–22, 2017, Indiana (Columbus)
October 2–6, 2017, Texas (El Paso)
October 9–13, 2017, Arkansas (Little Rock)
December 4–8, 2017, Kansas (Wichita)

Course 312—Commercial/Industrial Modeling Concepts
June 12–16, 2017, Virginia (Fredericksburg)
July 24–28, 2017, Tennessee (Mt. Juliet)
August 21–25, 2017, Kansas (Wichita)
November 6–10, 2017, Minnesota (Chanhassen)

Course 331—Mass Appraisal Practices and Procedures
June 12–16, 2017, Virginia (Fredericksburg)
August 21–25, 2017, Ohio (Columbus)
August 28–September 1, 2017, Texas (Austin)
October 23–27, 2017, Texas (Houston)

Course 332—Modeling Concepts
May 22–26, 2017, Florida (Tampa)
June 12–16, 2017, Virginia (Fredericksburg)
September 11–15, 2017, Wyoming (Cheyenne)
October 2–6, 2017, Nebraska (Lincoln)
October 23–27, 2017, Texas (Austin)
October 30–November 3, 2017, Texas (Houston)

Course 333—Residential Modeling Applications
June 12–16, 2017, Virginia (Fredericksburg)
August 7–11, 2017, Florida (Lake Mary)

Course 400—Assessment Administration
May 15–19, 2017, Lousiana (Baton Rouge)
May 22–26, 2017, Indiana (Columbus)
June 12–16, 2017, Virginia (Fredericksburg)
July 10–14, 2017, Alabama (Hoover)
July 17–21, 2017, Kansas (Wichita)
July 24–28, 2017, Ohio (North Canton)
August 21–25, 2017, Kentucky (Frankfort)
August 21–28, 2017, Kansas (Topeka)
September 11–15, 2017, Indiana (Fort Wayne)
November 27–December 1, Texas (El Paso)
December 4–8, Indiana (Indianapolis)

Course 402—Property Tax Policy
May 22–26, 2017, Florida (Tampa)
June 12–16, 2017, Virginia (Fredericksburg)
July 17–21, 2017, Kansas (Kansas City)

Course 500—Assessment of Personal Property
August 7–11, 2017, Tennessee (Mt. Juliet)
September 11–15, 2017, Kentucky (Frankfort)

Course 600—Principles and Techniques of Cadastral Mapping
May 15–19, 2017, Lousiana (Baton Rouge)
June 26–30, 2017, Tennessee (Mt. Juliet)
July 10–14, 2017, Missouri (Mt. Vernon)

Course 601—Cadastral Mapping, Methods & Applications
June 12–16, 2017, Virginia (Fredericksburg)
August 7–11, 2017, Florida (Lake Mary)
October 2–6, 2017, Wyoming (Lander)

One-Day Forum 931—Reading and Understanding Leases
June 9, 2017, Wisconsin (Milwaukee)

Member Anniversaries

5 Years

Nannette L. Bhaumik, Washington County, Fayetteville, AR
Paul E. Bidanset, City of Norfolk, Virginia Beach, VA
Bryan C. Bushnell, St Tammany Parish Assessor's Office, Covington, LA
Michael B. Campbell, Loudon County, Loudon, TN
Kelly K. Cassidy, St Tammany Parish Assessor's Office, Covington, LA
Charles Clabaugh, City of Boston Assessing Dept., Boston, MA
Vickie W. Dodson, Carteret County, Beaufort, NC
Michael F. Gill, St Tammany Parish Assessor's Office, Bush, LA
Benny Gonzales, Pinal County Assessor's Office, Florence, AZ
Dionne C. Harnish, Monroe County, Key West, FL
Richard K. Harris, Harris County Appraisal District, Houston, TX
Michael R. Jones, Fannin County Appraisal District, Bonham, TX
Kelsi Jurik, Polk County Assessor, Des Moines, IA
Chris Littrell, Fannin County Appraisal District, Bonham, TX
David K. Marazoff, Marazoff Assessing Services, West Moreland, NH
Dave A. Melanson, Property Valuation Services Corp. of Nova Scotia, Truro, NS, Canada
Karen S. Miles, Sedgwick County Appraiser's Office, Wichita, KS
Karen R. O'Shea, Bergen County Board of Taxation, Hackensack, NJ
Andrew S. Perry, Polk County Property Appraiser's Office, Eaton Park, FL
Jennifer E. Rearich, Maricopa County Assessor's Office, Tempe, AZ
Ursula C. Sharp, Alachua County Property Appraiser's Office, Gainesville, FL
Megan O. Slater, Stark County Auditor's Office, Canton, OH
Mark R. Stetson, Avitar Associates, Chichester, NH
Gloria J. Tillman, Jefferson County, Pine Bluff, AR
Raquel M. Vega, JM Vega & Associates, Spring, TX
Susan A. Walde, Snohomish County Assessor's Office, Arlington, WA
Emily Wrobleski, Property Valuation Services Corp. of Nova Scotia, Centreville, NS, Canada

10 Years

Cathryn Bennett, Franklin County, Ozark, AR, United States
David L. Best, Mercer County Property Valuation Administrator, Harrodsburg, KY
Barbara Cheek, Lincoln Charter Township, Stevensville, MI
Michele DaSilva, Town of Harwinton, Harwinton, CT
Laura M. Ecimovic, New Kent County, New Kent, VA
Ben K. Edmondson, Central Bank of the Ozarks, Springfield, MO
Doretta Elliott, Bambery County, Bamberg, SC
Erica D. Ewers, Double E Enterprises, LLC, Quincy, MI
James H. Greeley, Jr, State of Alaska, Dept. of Revenue, Tax Division, Anchorage, AK
Aaron Joseph Hampton, RES, Kissimmee, FL
Cindy Y. Hanback, City of Niles, Niles, MI
Karla J. Harkness, Lincoln County, Canton, SD
Silas R. Hrobar, Lowndes County, Valdosta, GA, United States
Cheryl L. Johnson, Northampton County Assessment Office, Easton, PA
Trina A. Jones, Van Buren County, Clinton, AR
Marina M. Kahn, Orleans Parish Assessor's Office 3rd MD, New Orleans, LA
Russell G. Key, Rutherford County Property Assessor's Office, Murfreesboro, TN
Scott D. Kunkleman, RES, Palm Beach County Property Appraiser's Office, Jupiter, FL
Donald L. Lippert, Jr, Grant Thornton, LLP, Chicago, IL
Brian C. Macdonald, Town of Stoneham, Stoneham, MA
Neoto H. McCullough, Escambia County Property Appraiser's Office, Pensacola, FL
J. Dale McCurdy, Catoosa County Board of Assessors, Ringgold, GA
Betty J. Middleton, Muscogee County, Columbus, GA
Stephen Miller, Larimer County, Fort Collins, CO
Christopher J. Paquette, City of Fitchburg, Fitchburg, MA
Lori S. Perkins, Uinta County Assessor's Office, Evanston, WY
T. Scott Porter, Johnson County Appraiser's Office, Olathe, KS
Michelle C. Robinson, Box Butte County, Alliance, NE
James H. Ruud, Douglas County, Waterville, WA, United States
Dusty Schlecht, City of Minot, Minot, ND
Shannon C. Sharp, Garland County, Hot Springs, AR
Herman A. Siewert, City of Philadelphia Office of Property Assessment, Philadelphia, PA
Lloyd P. Tasch, City of White Plains, White Plains, NY
T. Justin Walsh, Lake County Property Appraiser's Office, Tavares, FL
Nicolas L. Wheeler, County of Hillsdale, Hillsdale, MI

15 Years

Brenda E. Ayers, Montgomery County Appraisal Department, Montgomery, AL
Jennifer L. Berndt, Clay County Assessor's Office, Liberty, MO
Verle K. Blazek, Alberta Municipal Affairs-Assmt Audit, Lethbridge, AB, Canada
Jean-Paul Bouchard, Town of South Kingstown, Wakefield, RI
Sarah Bradshaw, Arkansas Public Service Commission, Little Rock, AR
Mitchell D. Ferry, Summit County Assessor's Office, Coalville, UT
Elizabeth N. Frizell, Douglas County Assessor's Office, Castle Rock, CO
Todd W. Jaremco, RES, City of Edmonton, Edmonton, AB, Canada
Gregory P. Lynch, CAE, City of Ames, Ames, IA
Robert E. Maloney, Palos Township, Palos Hills, IL, United States
Nettie F. Midgett, Dare County Justice Center, Manteo, NC, United States
Bessie Powers, Madison County, Bethalto, IL
Robert F. Reilly, Willamette Management Associates, Chicago, IL
Bryant T. Robbins, Municipality of Anchorage, Anchorage, AK
Bruce Wayne Turner, Heuristic Consulting Associates, Courtenay, BC, Canada
P. G. Waxman, Ocean County Board of Taxation, Lakewood, NJ

20 Years

Christopher S. Buckley, Buckley Appraisal Service, Inc, Niantic, CT
Jeffery J. Cutt, Miami-Dade County GSA, Miami, FL, United States
Craig V. Dovel, AAS, Dupage County, Wheaton, IL
Julie Romano Ethridge, Town of York Assessor's Office, York, ME
Charles H. Krebbs, RES, Glendale, AZ
Mariann Matz, Clark County Assessor's Office, Las Vegas, NV
Scott Mayausky, Stafford County, Stafford, VA, United States
Duard Mosley, Du Page County, Wheaton, IL
Pamela V. Oxsher, Rutherford County Property Assessor's Office, Murfreesboro, TN
Carl Peterson, Du Page County, Wheaton, IL
JoAnn F. Pierson, Ryan, LLC, Scottsdale, AZ, United States
John Steven Trabold, Advanced Valuation Systems, Inc, Dallas, TX

25 Years

Dolores L. Bourda, St. Martin Parish, Saint Martinville, LA
John Chaponis, Town of Colchester, Colchester, CT
Russell L. Counts, Jr, St. Lucie County Property Appraiser, Fort Pierce, FL, United States
Joanne M. Graziano, AAS, Massachusetts Dept. of Revenue, Financial Services, Boston, MA
L. Wade Patterson, Garfield County Assessor's Office, Enid, OK
Daniel Raycroft, City of Newburyport, Newburyport, MA, United States
Debra Ann Surratt, Goshen County Assessor, Torrington, WY
Kenneth J. Swain, Town of Charlestown, Charlestown, RI

30 Years

Thomas P. Cheeseman, City of St Johns, Con Bay South, NL, Canada
Linda L. Cwiek, Town of North Kingstown, North Kingstown, RI
Thomas J. Fuhrmann, Grant, Stanton, Steven, & Haskell Counties, Ulysses, KS
Thomas G. Glock, Borough of Gibbsboro, North Wildwood, NJ
Greg F. Johnson, Caddo Parish Assessor's Office, Shreveport, LA
Larry E. McCormick, CAE, Midwest Appraisal Service, Findlay, OH
Robert B. Thomas, Jr, Caddo Parish Assessor's Office, Shreveport, LA
Edward H. Zupancic, Lake County Auditor's Office, Painesville, OH

35 Years

Rick L. Stuart, CAE, TEAM Consulting, Topeka, KS

40 Years

Jimmy Alvarez, Bradford County, Starke, FL, United States
David L. Reid, Transylvania County, Lake Toxaway, NC, United States

45 Years

Leon A. Klein, CAE, Nationwide Consulting Company, North Haledon, NJ

50 Years

Kenneth R. Byrd, CAE, Equi-Tax Ad Valorem Tax Service, Houston, TX

55 Years

Richard R. Almy, Almy, Gloudemans, Jacobs, & Denne, La Grange, IL

Canada, British Columbia
Rod Ravenstein
Canada, Ontario
Jamie Walker
Netherlands
Marco Kuijper
South Africa
Alan Stephenson
United Kingdom
Paul McDermott
Stuart Frank Murphy
Alabama
Joseph T. Dobson
Devin K. Fowler
John C. Hay
Arizona
Adam R. Aarsvold
Dianne M. Bobb
Anthony C. Brennan
Michelle L. Darby
Arlene T. Felix
Annette Fettig
Timothy P. Grogan
April J. Hamm
Leroy A. Johnson, Jr
George E. Lettman
Duane A. McClendon
Linda M. Pessin
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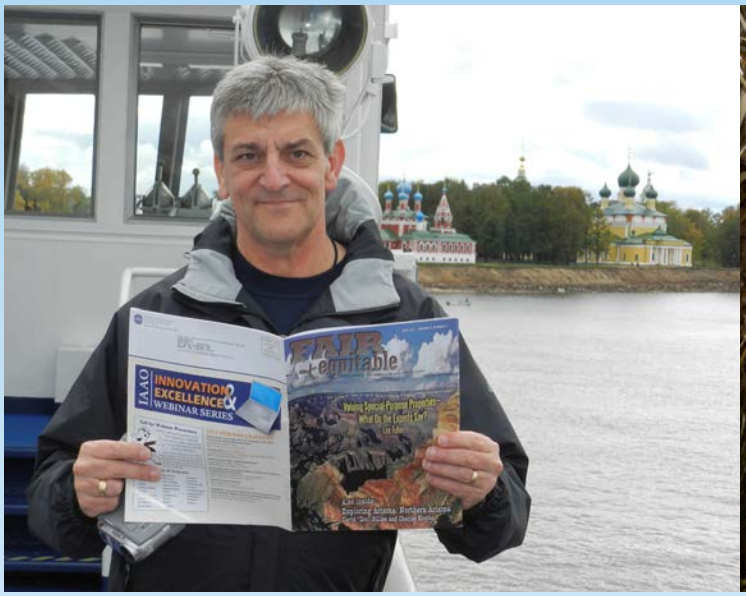
Matthew Russell
Washington
Danny R. Rominger, Jr
West Virginia
Joseph R. Romano
Wisconsin
Gail M. Kern
Timothy Krystowiak
Ryan Wilson

Where Do You Read FAIR & EQUITABLE?



Above left, Steven J. Hopkins, Delaware Appraisal Group, LLC, reads *F&E* while cruising on the Volga River from Moscow to St. Petersburg, Russia.

Mr. Hopkins was a property tax appraiser for New Castle County, Delaware, for 25 years. After he retired from New Castle County, he was retained to train appraisers for the next few years. He has been a member of IAAO for 35 years.

Above right, Chris Werner, an Appraisal Supervisor for Commercial Property in Washington County, Oregon, reads *F&E* on opening day of duck season in Oregon. Mr. Werner and friends hunted on Sauvie Island just outside of Portland. There were a few slow periods, so while sitting in the blind, Werner pulled out his newest issue of *F&E*. His dog and hunting partner, Patsy, was a little bored.

Unshelved in the Research Library

Mary Odom, MLS

Let's take an insider's tour of the newly remodeled library space at headquarters to see how the association's resources have expanded. For the last six months, headquarters has been under construction to finish some of the unfinished parts of the building and to expand the research library.

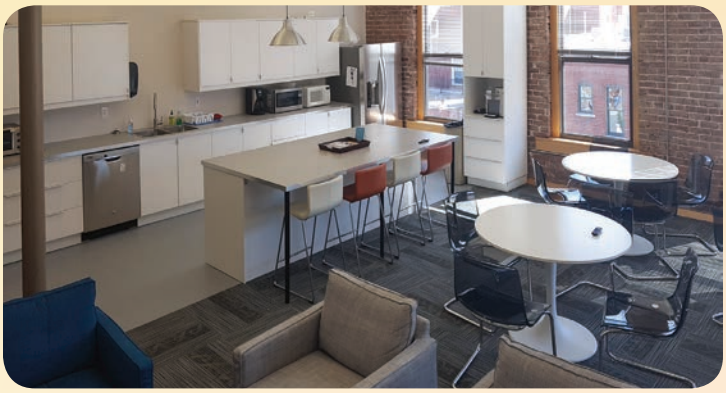
Let's start the journey at the entrance to the Paul V. Corusy Memorial Library, where Corusy is honored for serving as Executive Director from 1963 to 1981. The library was dedicated to him in 1984 by President Barbara Brunner because of his vision of a knowledge vault that would house the world's assessment literature, which he implemented by hiring the first trained librarian in 1974.

The newly remodeled research library

The collection contains more than 20,000 volumes—books, journals, government documents, conference proceedings, and most recently, eBooks. The collection grows by 500 to 1,000 items each year, and even with electronic materials, the space had reached capacity. The remodeling project nearly doubled the space by annexing the former staff break room and relocating the break room to the third floor.

The library subscribes to about 100 periodicals and displays the most current ones for staff and visitors to stay up-to-date on the latest advances. The Research Department is staffed by two librarians and one research manager. Two staff members are on-site year round, and the research manager works off-site in Chicago. She is on-site every couple of months for research meetings and work sessions, but is always available to members via phone, e-mail, and video conferencing.

During construction, the compact shelving unit had to be relocated; this meant that all 20,000 volumes had to be removed from the shelves. Because there was no other place to store that many books, they had to be moved off-site to a climate-controlled storage facility. Library moves are typically done with mobile shelves instead of using boxes. Staff spent a week transferring books to these mobile shelving carts, which were then shrink-wrapped with plastic to protect the books in transit. They were loaded on a truck and taken to storage for two months. We then repeated the process in reverse to restock the shelves.



The new third-floor break room

Research Department staff (l to r) Heather Steel, Margie Cusack, and Mary Odom

Visitors are always welcome at headquarters, and a special place has been created for guests to work, a Research Zone (countertop). This area is reserved for anyone who needs to access the library's resources on-site, such as researchers, members, students, or even taxpayers. Visitors can bring their own laptop or use one of the library's laptops and consult with research staff during their visit.

Mobile shelving carts ready for moving day

Of course, members can use the library without coming to headquarters by borrowing books and having them delivered by UPS, requesting materials via email, or just calling and discussing a question over the phone.

New desks and a new guest reading area

Demo day marked the start of the library's transformation.

The Executive Board and the Executive Director, Ron Worth, made this remodel possible first by catching the vision for expanding the Research Department and then by creating an inviting break room for staff and visitors to gather for a meal, an informal staff meeting, or a special occasion. This area was once unfinished and used for storage, and now it has been transformed into a relaxing, comfortable break room to enjoy lunch, coffee, socializing, and of course the view of the Kansas City skyline. Surrounded with windows, the bright room offers a coffee bar, a big screen television, and lounge chairs to give visitors a chance to sit back and unwind.

Restocking the shelves after a successfull remodeling project

It's a great honor to serve IAAO. We work for you and want you to consider us your personal research assistants. Contact us with your impossible questions, and we won't rest until they're answered.

Virtually Yours,

Mary Odom, MLS

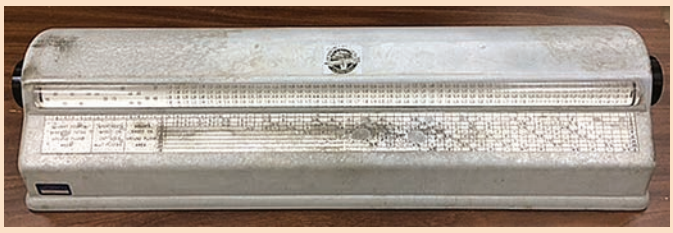
Director of Library Services

The Library as Archive

The Paul V. Corusy Memorial library also houses 83 years of rich IAAO history in 6 archival cabinets, including the association's incorporation papers, the proceedings from the first conference, the first published books, the first video, and other rare and valuable pieces, such as the 1921 assessment manual from the District of Columbia.

The archive stands as a refuge for assessment history and knowledge against the ravages of time. The library preserves not only IAAO's historical records but also artifacts from assessment history like a 1950s' Hunnicutt Cost Estimator. Commonly known as the Hunnicutt Wheel, it was donated by the Lake County, Florida, property appraiser, Carey Baker. The wheel was used for valuing both residential and commercial buildings up until the time a CAMA system was adopted.

Another artifact is a vintage carpenter's tape in leather that is believed to have been made in the early 1900s; it was donated by Bill Wadsworth. Yet another artifact is the building cost slide rule that was patented in 1955 by Hunnicutt. It is basically a manual computer that greatly simplified cost estimating for building construction.



Vintage Hunnicutt Cost Estimator

International Association
of Assessing Officers
314 W 10th St
Kansas City, Missouri 64105-1616

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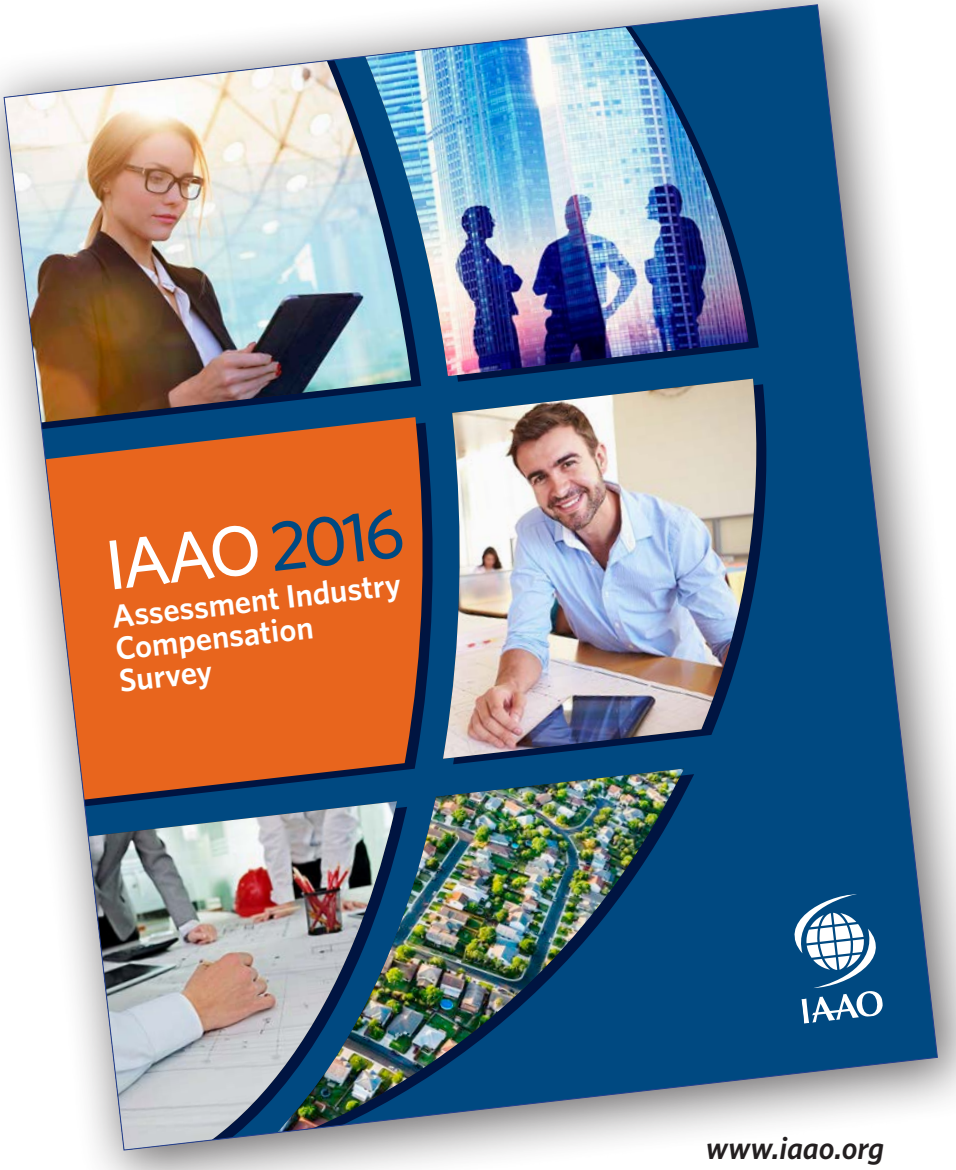
NOW AVAILABLE!



IAAO recently conducted an important survey regarding industry compensation and benefits to discover trends and establish a baseline for future studies. This data will serve the career development needs of assessors and help attract young professionals to the field of assessment.

The final report will be available in March. Here are just a few of the results you will find in the report.

- In the next nine years, 48% of respondents plan to retire or leave the assessment industry
- The annual base salary for IAAO members was reported at $66,000 while nonmembers was found to be lower at $56,800
- IAAO designees earn $1,700 more than non-designees

Pricing

eBook	$199 Member $399 Nonmember
Printed Book	$249 Member $449 Nonmember

The *IAAO 2016 Assessment Industry Compensation Survey* is now available for sale at *www.iaao.org.*

www.iaao.org